Prepared for

Settling Work Defendants

DRAFT HEALTH AND SAFETY PLAN

Omega Superfund Site
Operable Unit 2

30 August 2016

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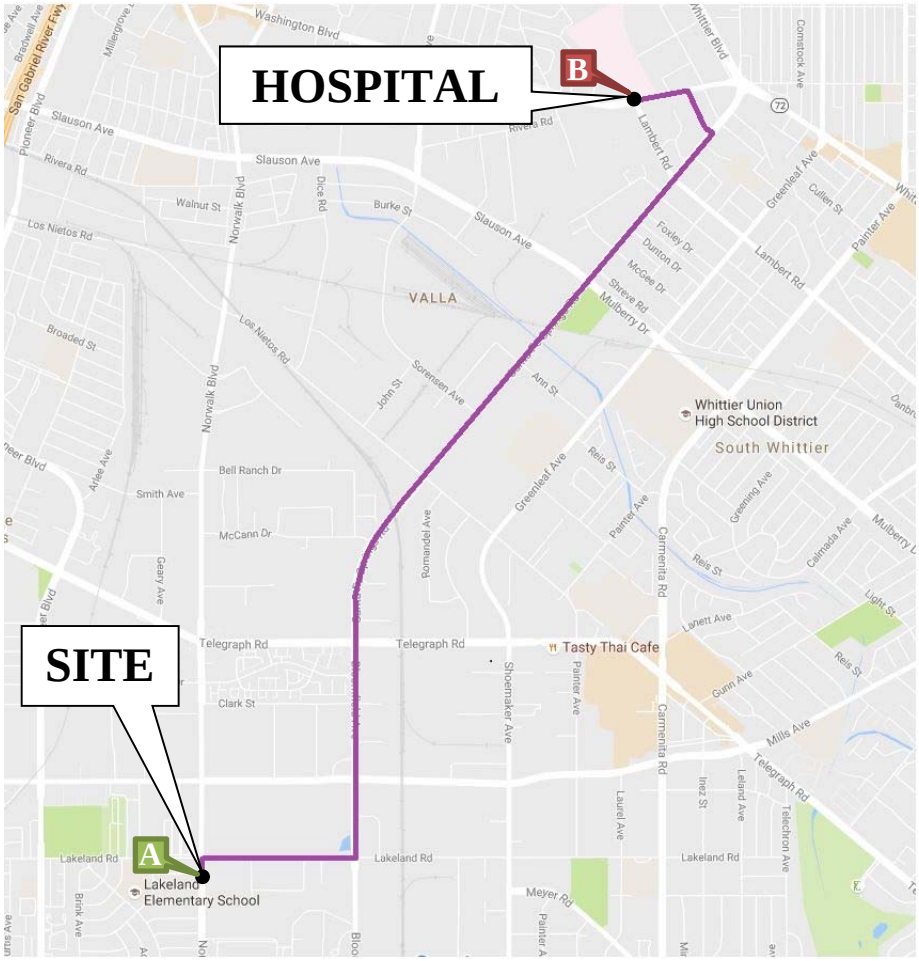
APPENDICES

ROUTE TO SUGGESTED HOSPITAL



PRESBYTERIAN INTERCOMMUNITY HOSPITAL
Phone Number: (562) 698-0811
12401 Washington Blvd
Whittier, California 90602

Written Directions to Hospital from Site:
Distance/Time: 3.7 mi/10 min

1. Head **north** on **Norwalk Blvd** toward **Lakeland Rd** 262 ft
2. Turn **right** at the **1st cross street** onto **Lakeland Rd** 0.5mi
3. Turn **left** onto **Bloomfield Ave** 0.7 mi
4. **Continue** onto **Santa Fe Springs** Rd 2.1 mi
5. Turn **left** onto **Persing Dr** 0.2 mi
6. Turn **left** onto **Washington Blvd** 0.2 mi
7. Arrive at **12401 Washington Blvd** *The last intersection is Seasons Ave, if you reach Lambert Rd, you've gone too far.*

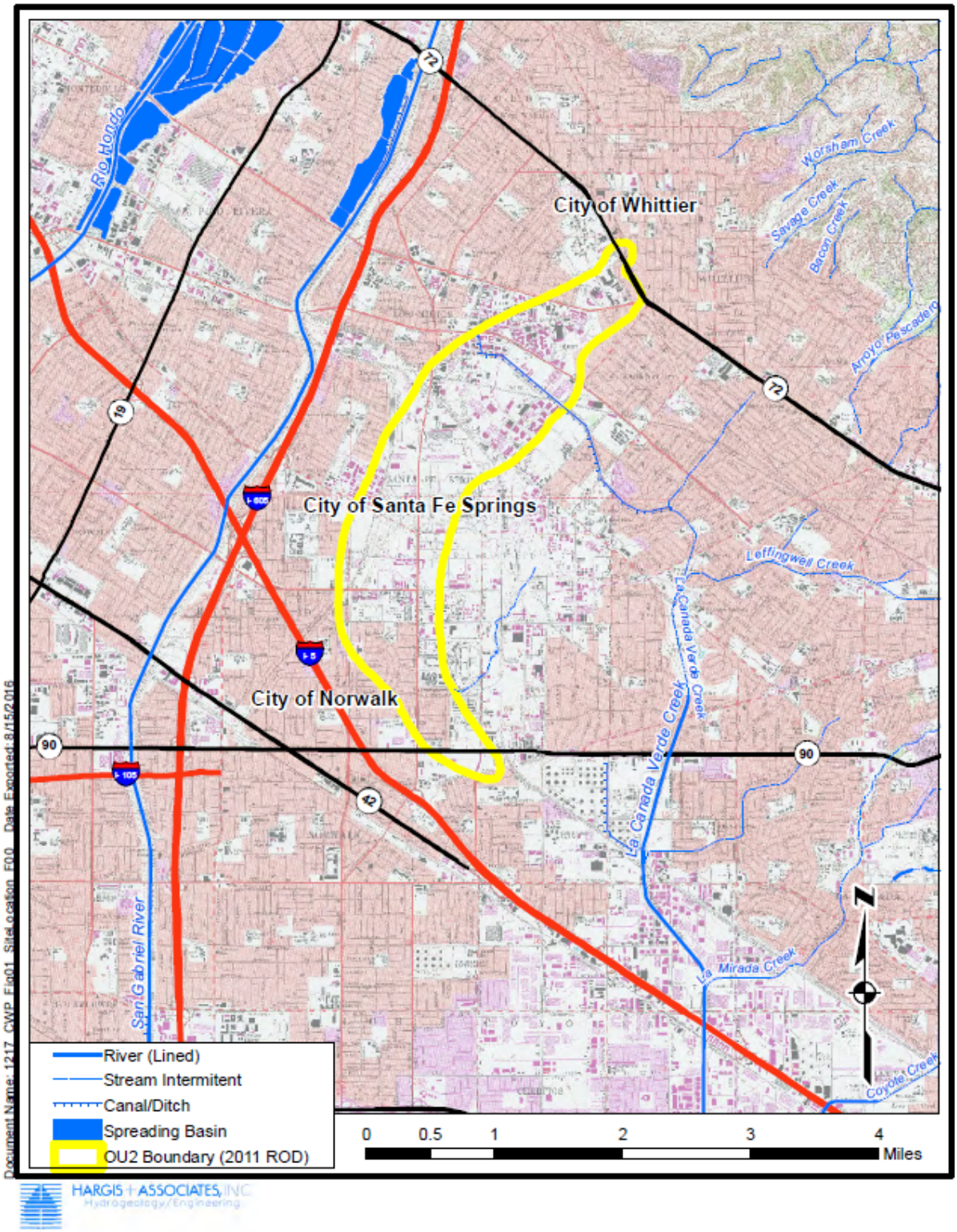
ROUTE TO SUGGESTED URGENT CARE FACILITY

URGENT CARE AMERICA, INC.
Phone Number: (562) 906-7766
13470 Telegraph Rd
Whittier, CA 90605

Written Directions to Urgent Care Facility from Site:
Distance/Time: 2.4 mi/5 min

1. Head **north** on **Norwalk Blvd** toward **Lakeland Rd** 0.3 mi
2. Turn **right** at the **2nd cross street** onto **E Florence Ave** 1.0 mi
3. Turn **left** onto **Shoemaker Ave** 0.5 mi
4. Turn **right** onto **Telegraph Rd** 0.7 mi
5. Arrive at **13470 Telegraph Rd** *The last intersection is Mina St, if you reach Gunn Ave, you've gone too far.*

SITE LOCATION FIGURE



1. LIMITATIONS

Geosyntec has prepared this document as a template for a site-specific Health and Safety Plan (HASP) for the Remedial Design activities at the Omega Chemical Superfund Site, Operable Unit 2 ("Project"). These activities include the pre-design investigation, the leading edge investigation, and the annual groundwater monitoring program in Operable Unit 2 (OU2). This HASP is for use on the Project, and shall only be used in concert with a complete emergency contact notification list for the supervising contractor. Contact numbers provided herein for Geosyntec personnel shall only be used by Geosyntec employees and subcontractors under Geosyntec's supervision.

Geosyntec is not liable for the health and safety of other contractors or the subcontractors overseen by other contractors. Contractors need to provide their H&S Planning Documents specific for their work activities to supplement the minimum requirements noted in this HASP. At a minimum, as part of its scope of work, the future supervising contractor for the Remedial Design activities at the Omega Chemical Superfund Site, OU2, shall provide an updated HASP with the appropriate emergency contact information, emergency response procedures, and key personnel and their health and safety responsibilities.

2. INTRODUCTION

This HASP was prepared to address potential project-specific hazards known or suspected to be present associated with the existing conditions and work to be performed at the work site(s). This HASP was prepared to meet the minimum requirements specified in Occupational Safety and Health (OSHA) Hazardous Waste Operations Emergency and Response (HAZWOPER) program 29 CFR 1910.120, and the H&S requirements of the client and associated parties.

3. SIGNATURES

3.1 Preparers and Reviewers

This HASP must be maintained on site when field work is being performed. The project's Health and Safety Coordinator can change or amend this document, in agreement with the Director of Health and Safety or Project Manager. Amendments (e.g., changes in personal protective equipment, addition of tasks, etc.) must be documented in Section 20 and in Appendix A. This HASP must be reviewed and amended on an annual basis for projects lasting more than one year.

Prepared by: _____
Project's Health and Safety Coordinator Date

Reviewed by: _____
Contractor's Director of Health and Safety Date

Approved by: _____
Project Manager Date

This HASP has been given to the following H&S approved contractor(s).

Contractor: _____ Representative: _____ Date: _____

Contractor: _____ Representative: _____ Date: _____

Contractor: _____ Representative: _____ Date: _____

3.2 Site Workers

This HASP must be reviewed by personnel prior to site work. Workers not in attendance at the initial meeting must be trained by the Project's Health and Safety Coordinator on the information covered in the pre-entry briefing. After reading the HASP and attending a pre-entry briefing, All other parties covered under this HASP must sign the following acknowledgment statement.

"I have read, understand, and will perform my work in accordance with the information set forth in this HASP."

Signature	Printed Name	Date

4. EMERGENCY CONTACT INFORMATION

Contact	*Telephone Numbers*	
	Office	*Alternate (Type)*
Fire Department – Sante Fe Springs Fire Department Station 1	(562) 944-9713	
Police Department – Norwalk Sheriff's Station	(562) 863-8711	
Hospital – Presbyterian Intercommunity Hospital	(562) 698-0811	
Utility Emergencies	811	
Client Contact -		
Other -		

Contractor shall add key project personnel and their emergency contact information to the table above.

5. APPLICABILITY OF THIS HASP

This HASP was developed with information based on site history, potential chemical, physical, and environmental hazards to comply with the minimal requirements of 29 CFR 1910.120. Contractors, at a minimum, shall ensure that their employees and subcontractors comply with these procedures and other health, safety and security provisions in the Contract. Compliance with this HASP shall represent the minimum requirements to be met by contractors, who shall be responsible for examining all requirements and determining whether additional or more stringent health, safety and security provisions are appropriate for their portion of the work and implementing them accordingly. Therefore, for firms executing all or any portion of the work, this document and its contents should not be used without a thorough peer review by their health and safety managers. Prior to commencing work, such firms are responsible for reviewing and supplementing the HASP to add appropriate procedures specific to their portion of the work.

6. SITE/TASK/HAZARD DESCRIPTION

6.1 Site Background

The following is a brief description of the site, including information as to the location, approximate size, and current usage. A description of the tasks to be performed is also presented.

- Site Location: The former Omega Property was located at 12504 and 12512 East Whittier Boulevard, Whittier California. OU2 includes areas downgradient (south/southwest) of the former Omega property.
- Approximate Size of Site: 4 square miles for OU2
- Current Site Usage: OU2 encompasses an area with a mixture of commercial/industrial, residential, and rural land use.

- Description of Surrounding Property/Population:

North Mixed land use East Mixed land use

South Mixed land use West Mixed land use

6.2 Task Descriptions

Task 1: Drilling Oversight and Soil Sampling

Oversight of drilling operations, including use of mud rotary, sonic, and hollow-stem auger drill rigs for lithologic logging and sample collection. Activities associated with drilling and soil sampling activities include:

- Utility locating for underground and aboveground obstructions;
- Borehole drilling and soil samping using various drilling methods such as hollow-stem auger, sonic drilling, and single pass mud rotary;
- Traffic control (if necessary based on sampling locations)

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Work around heavy equipment (drill rigs) – avoid work around the rig when possible and remain aware of moving parts, pinch points, and other risks; wear ear protections (such as earplugs) when drill rigs are operating
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Utility related hazards – perform utility clearance prior to drilling and hand auger to 5’ bgs
- Storage of bulk materials – securely store soil cuttings and water from decon in 55-gallon drums for disposal
- Exposure to site contaminants – wear nitrile gloves when handling site material and any equipment that contacted contaminated site material.
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building

Task 2: Geophysical Logging

Oversight of geophysical logging activities, which includes logging of boreholes/monitoring wells using electronic, downhole geophysical logging tools. Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Work around heavy equipment (drill rigs) – avoid work around the rig when possible and remain aware of moving parts, pinch points, and other risks
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building

Task 3: Groundwater Monitoring Well Installation

Oversight of drilling activities associated with the installation of groundwater monitoring wells. Three well clusters will be installed with up to 5 wells at each cluster. The deepest well in each cluster will be installed to a maximum depth of 500 feet bgs.

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Work around heavy equipment (drill rigs) – avoid work around the rig when possible and remain aware of moving parts, pinch points, and other risks; wear ear protections (such as earplugs) when drill rigs are operating
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Exposure to site contaminants – wear nitrile gloves when handling site material and any equipment that contacted contaminated site material.
- Exposure to leaking equipment fluid – wear nitrile gloves if handling leaking material and have a spill kit available near the work area
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building

Task 4: Monitoring Well Development

Oversight of drilling contractors conducting well development activities. Well development will include a combination of bailing, surging, and pumping to stabilize the filter pack and remove fines from filter pack and well screen.

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Work around heavy equipment (drill rigs) – avoid work around the rig when possible and remain aware of moving parts, pinch points, and other risks; wear ear protections (such as earplugs) when drill rigs are operating
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Exposure to site contaminants – wear nitrile gloves when handling site material and any equipment that contacted contaminated site material.
- Exposure to leaking equipment fluid – wear nitrile gloves if handling leaking material and have a spill kit available near the work area
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building

Task 5: Engineering Survey

Oversight of surveying contractor and collection of GPS coordinates.

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building
- Working alone – if personnel is working alone for the GPS coordinate collection, a check in procedure should be developed with the PM to inform them of personnel's arrival onsite and departure from the site to ensure their safe entrance and exit.

Task 6: Groundwater Well Monitoring

Oversight of contractor to conduct water level measurements and groundwater well sampling. The installed monitoring wells will be sampled quarterly for three quarters after installation and incorporated into the Work Area Monitoring Plan (WAMP)

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest, set up traffic cones and use buddy system to watch for traffic
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building
- Exposure to site contaminants – wear nitrile gloves when handling site material and any equipment that contacted contaminated site material.

Task 7: Aquifer Testing

Oversight of contractor conducting aquifer testing. The following task will be conducted as part of the aquifer testing:

- Removal of existing pump and piping
- Deployment of transducers
- 48-hour pumping test
- Collection of groundwater samples
- Removal of pump and restoration of well to original condition

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Work around heavy equipment (drill rigs) – avoid work around the rig when possible and remain aware of moving parts, pinch points, and other risks; wear ear protections (such as earplugs) when drill rigs are operating
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building
- Exposure to site contaminants – wear nitrile gloves when handling site material and any equipment that contacted contaminated site material.

Task 8: Injection Testing

Oversight of the implementation of a series of injection tests to evaluate feasible remediation amendment injection rates and pressures.

Potential hazards associated with this task include the following:

- Work in thoroughfares/around traffic – wear safety vest and use buddy system to watch for traffic
- Work around heavy equipment (drill rigs) – avoid work around the rig when possible and remain aware of moving parts, pinch points, and other risks; wear ear protections (such as earplugs) when drill rigs are operating
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Exposure to site contaminants and amendments – wear nitrile gloves when handling site material, amendments, and any equipment that contacted contaminated site material/amendments. Have a spill kit on hand for any releases.
- Stinging insects/ vermin/ snakes – wear pants and boots, and remain wary of walking path and potential locations of insects/vermin/snakes. Be aware of animals such as dogs on private property
- Heat Stress – stay hydrated and take breaks as necessary in the shade or cool building
- Manual Lifting – use proper lifting techniques. Use buddy system and engineering controls (such as dolly and cart) for anything over 50 pounds.

Task 9: Mobilization and Demobilization

Traveling to and from the Site, entering and exiting site, mobilization, and demobilization.

Potential hazards associated with this task include the following:

- Driving/traffic – defensive driving while operating vehicle; drivers should have valid drivers license; the vehicle should have vaid insurance policy and registration in the glove compartment
- Slip, trip, fall – awareness of uneven surfaces and use of steel toe boots
- Traffic around drill rig/heavy vehicle while staging – only lead driller may operate drill rig; lead driller should maintain communication with team members while operating drill rig; team members should provide a 20-foot clearance from vehicles
- Site security – check in with security office, if available, when arriving on site. All gates and buildings should be secured and/or locked before leaving site.

Task Hazard Analyses (THAs) associated with these tasks are presented in Appendix B.

6.3 Chemical Hazards

The classes of chemicals that are known or suspected to be present that may be encountered while performing site work include the following:

- Chlorinated volatile organic compounds (VOCs)
- Hexavalent Chromium
- 1,4-Dioxane

Controls for these hazards are presented in the THAs included in Appendix B. A summary of these chemical hazards is presented in Appendix C.

6.4 Physical Hazards

The following physical hazards have been identified associated with the work to be performed and the site conditions.

- Compressed Gases
- Downhole Logging
- Drilling (including Indoor)
- Drum and Container Handling
- Heat Stress
- Heavy Equipment
- Lifting Heavy Loads
- Loud Noise/Vibration
- Portable Power/Hand Tool
- Radiation (ionizing and non-ionizing)
- Slips, Trips, and Falls
- Thoroughfares / Traffic
- Urban Environments
- Utility Protection

Controls for these hazards are presented in the THAs included in Appendix B.

6.5 Biological Hazards

The following biological hazards have been identified associated with the work to be performed and the site conditions.

- Allergic reaction to poisonous plants, such as poison oak
- Biting/stinging insects

Controls for these hazards are presented in the THAs included in Appendix B.

7. GENERAL SAFE WORK PRACTICES

The following general safe work practices must be adhered to while performing site work:

- Basic PPE shall be worn, including hard hats, safety glasses, hard-toed boots, gloves (canvas and/or nitrile) and high-visibility vests. If conditions allow, the requirement for hard hats and hard-toed boots may be reduced with approval of the Project's Health and Safety Coordinator and Project Manager.
- Minimize contact with impacted materials. Do not place equipment on the ground. Do not sit or kneel on potentially contaminated surfaces.
- Smoking, eating, or drinking after entering the work zone and before personal decontamination is not allowed. Employees who are suspected of being under the influence of illegal drugs or alcohol will be removed from the site. Workers taking prescribed medication that may cause drowsiness shall not operate heavy equipment and are prohibited from performing tasks where Level C or B personal protective equipment is required.
- Practice good housekeeping.
- Use of contact lenses is not allowed under certain hazardous working conditions.
- The following conditions must be observed when operating a motor vehicle:
    - Wearing of seat belts is mandatory
    - The use of headlights is mandatory during periods of rain, fog, or other adverse weather or low-light conditions
    - A backup warning system or use of vehicle horn is mandatory when the vehicle is engaged in a backward motion
    - Posted traffic signs and directions from flagmen must be observed
    - Equipment and/or samples transported in vehicles must be secured from movement
- In an unknown situation, always assume the worst reasonable conditions.

- Be observant of your immediate surroundings and the surroundings of others. It is a team effort to notice and warn of dangerous situations. Withdrawal from a hazardous situation to reassess procedures is the preferred course of action.
- Conflicting situations may arise concerning safety requirements and working conditions. These must be addressed and resolved rapidly by the Project's Health and Safety Coordinator and PM to relieve motivations or pressures to circumvent established safety policies.
- Unauthorized breaches of specified safety protocol are not allowed. Workers unwilling or unable to comply with established procedures will be asked to leave the work site.

8. EMERGENCY RESPONSE

This section discusses emergency response procedures and response equipment to be maintained on site. A table presenting a list of contacts and telephone numbers for the applicable local and off-site emergency responders is provided inside the front cover of this HASP (after figures). Contractors must provide emergency contact information and injury and emergency response procedures for their field personnel and subcontractors that are overseen by the contractors' personnel.

8.1 Injury and Emergency Response Procedures

In the event of an **injury** to an employee, injury response and reporting procedures must be implemented immediately. In the event that an **emergency** develops under Geosyntec's direct supervision, the following procedures are to be implemented:

- The Project's Health and Safety Coordinator, or designated alternate, should be immediately notified via the on-site communication system. The Health and Safety Coordinator assumes control of the emergency response.
- If applicable, the Health and Safety Coordinator must immediately notify off-site emergency responders (e.g., fire department, hospital, police department, etc.) and must inform the response team of the nature and location of the emergency on site.
- If applicable, the Health and Safety Coordinator may call for evacuation of the site. Site workers should move to their respective refuge stations using the evacuation routes provided on the Site Map.
- For small fires, flames should be extinguished using the appropriate type of fire extinguisher. Large fires should be handled by the local fire department.
- If a worker is injured, injury response procedures must be implemented immediately.
- After an incident has stabilized, incident reporting procedures must be followed.

8.2 Emergency Response Equipment

Emergency response equipment will be maintained in the work area as necessary for this project. Examples of emergency response equipment include first aid kits, fire extinguishers (Type ABC), and eyewash bottles.

9. KEY PERSONNEL AND HEALTH AND SAFETY RESPONSIBILITIES

Project personnel roles and their responsibilities in regard to health and safety concerns on this project are as given below.

Project Manager (PM):

- Approve this HASP and amendments, if any;
- Monitor the field logs for health and safety work practices employed;
- Coordinate with project health and safety coordinator so that emergency response procedures are implemented;
- Check that corrective actions are implemented;
- Check and document that qualified personnel receive this plan and are aware of its provisions and potential hazards associated with site operations, and that they are instructed in safe work practices and familiar with emergency response procedures; and
- Provide for appropriate monitoring, personal protective equipment, and decontamination materials.

Project Health and Safety Coordinator:

- Prepare and implement project HASP and amendments, if any, and report to the Project Manager for action if deviations from the anticipated conditions exist and authorize the cessation of work if necessary;
- Check that site personnel meet the training and medical requirements;
- Conduct pre-entry briefing and daily tailgate safety meetings;
- Check that monitoring equipment and personal protective equipment are operating correctly according to manufacturer's instructions and such equipment is utilized by on-site personnel. Calibrate or check calibration of monitoring equipment and record results;
- Check that decontamination procedures are being implemented;
- Implement site emergency response and follow-up procedures;
- Notify the health and safety director in the event an emergency occurs; and
- Perform and document weekly inspections.

Health and Safety Director:

- Review and audit HASP and amendments;
- Notify Director of Health & Safety when an emergency occurs;
- Assist with the implementation of the corporate health and safety program; and
- Consult with staff on health and safety issues.

Site Workers

- Provide verification of required health and safety training and medical surveillance prior to arriving at the site;
- Notify supervisors of workplace accomodation requirements as the result of physical limitations or medical conditions;
- Attend pre-entry briefings and daily tailgate safety meetings;
- Immediately report accidents and/or unsafe conditions to the Project's Health and Safety Coordinator;
- Be familiar with and abide by the HASP; and
- Be ultimately responsible for his or her own safety.

10. WORKER TRAINING AND MEDICAL SURVEILLANCE

Personnel involved in field activities subject to OSHA HAZWOPER 29 CFR 1910.120 will be required to participate in both a health and safety training program that complies with criteria primarily set forth by the OSHA HAZWOPER in 29 CFR 1910.120(e) and a medical surveillance program covered under 29 CFR 1910.120(f), or equivalent regulations based on the jurisdiction in which the project is performed.

10.1 Pre-Assignment and Annual Refresher Training

Prior to arrival on site, the Project Manager will be responsible for monitoring that their staff meet the requirements of pre-assignment training (such as 40-hour or 24-hour initial training). In addition, personnel must be able to document dates of attendance at an annual 8-hour refresher and three days of fieldwork under a qualified supervisor. Failure to provide this documentation will prohibit entry to the active work area(s) (i.e., Exclusion Zone).

10.2 Site Supervisor Training

Consistent with OSHA 29 CFR 1910.120 (e)(4), prior to arrival on site, individuals designated as site supervisors require an additional eight hours of specialized training.

10.3 Initial Site Safety Orientation and HASP Review

In addition to complying with 29 CFR 1910(e), site personnel will attend an initial safety orientation during which the HASP and applicable THAs will be reviewed prior to initiating field activities. This review will include the following:

- Understanding the lines of authority regarding health and safety and site personnel roles and responsibilities;
- Information of specific hazard agents related to the site and site operations will be discussed, such as health hazards of site chemicals and specific safety hazards of processes, tools, and equipment;
- Training in the proper use, maintenance, and decon protocol of PPE and Level(s) of Protection;
- Appropriate work practices and engineering controls to reduce/eliminate exposures to site hazards will be reviewed;
- Personnel will be informed of means for normal site and emergency communication(s);
- If applicable, air monitoring strategies will be discussed to include the frequency/types, action levels, sampling techniques, pre/post calibration techniques;
- Unique/site specific medical surveillance requirements that need to be considered based on site contaminants;
- Understanding site control measures, work zones, and proper decontamination procedures for personnel/tools/vehicles, etc. to reduce the potential for both on/off site contamination;
- Personnel will be trained to respond quickly and properly in the event of an emergency; and
- Personnel involved in specific hazardous activities, such as confined space entry, drum handling, sampling unknowns, etc. will receive specialized training in the appropriate techniques to employ prior to commencing these operations.

10.4 Baseline Medical Surveillance Exam

The baseline medical examination is used to identify physical capabilities and certain medical limitations that may have an impact on the candidate's ability to perform in the position and/or job activity for which he/she is being considered, as well as to establish certain baseline medical parameters. The initial test results can then be compared against future periodic or project-specific monitoring results.

10.5 Periodic/Annual/Biennial Medical Exam

The periodic medical examination is used to evaluate an employee's continued fitness for duty and to assess possible impact(s) occupational exposures may have had on their health status. The periodic examination includes an update to the medical and work history, results of previous occupational exposure assessments, and a detailed medical exam tailored to the job description.

The frequency of the periodic medical exams based on regulatory requirements, the position/work activities of the employee, and the level of exposure to physical, chemical, and biological agents will be determined by the Medical Director of the employer's occupational health services agency.

10.6 Exposure/Activity/Project-Specific Medical Testing

Exposure-specific medical tests and/or evaluation of biological indices may be conducted to establish a baseline for certain project-specific parameters, to monitor the effectiveness of hazard controls, and/or to assess the impact of occupational exposures associated with a particular work activity or project. The Medical Director, in coordination with the employer's H&S Department, will require or recommend an exposure-specific exam when deemed appropriate based on knowledge of project hazards, occurance of employee health symptoms, or an unexpected exposure event. Requests for exposure-specific examinations will be forwarded to the employer's H&S Department, who will process the requests in collaboration with the Medical Director. The Medical Director will determine the type and frequency of the exposure-specific medical exams for employees designated to participate based on sound medical practice, latest toxicology information, and current regulatory requirements.

10.7 Exit Exam

An exit medical examination is offered when an employee leaves the medical surveillance program, either because of termination of employment or because of reassignment to a position not designated or identified to participate in the medical surveillance program. This optional exit examination may be used to assess potential changes in medical status that have occurred during the course of employees' previous work activities, and to establish a medical baseline at the time of departure.

11. MAPS AND SITE CONTROL

11.1 Routes to Hospital and Urgent Care Facility

APPLIES TO ALL TASKS

A suggested hospital and urgent care facility near the site have been identified. Maps to the hospital and urgent care are included after the Table of Contents of this HASP. Both figures also include the facility name and phone number. Contractors and project personnel can provide routes to alternative hospitals and urgent care facilities as deemed appropriate by their H&S standards.

11.2 Site Map

APPLIES TO ALL TASKS

A site map is located inside the cover of this HASP. The site map is intended to show the location of the work zone(s), to provide on-site orientation, and to delineate evacuation routes. Changes may be made to the site map by the Project's Health and Safety Coordinator based on changing site conditions. The site map should be accessible in the work area.

11.3 Buddy System

APPLIES TO ALL TASKS

The buddy system is required when work is performed in hazardous areas. The buddy system includes maintaining regular contact with one or more onsite project personnel, clients, and/or contractors to periodically check on the condition of site workers such that each employee in the work group is observed by (or in verbal contact with) at least one other employee in the work group. For field visits with only one employee onsite, the buddy system shall be implemented via periodic telephone contact with offsite project personnel. The purpose of the buddy system is to provide rapid assistance to employees in the event of an emergency.

11.4 Controlled Work Zones

APPLIES TO TASK: ☒① ☐② ☒③ ☒④ ☐⑤ ☒⑥ ☒⑦ ☒⑧ ☒⑨ ☐ Not Applicable

Three controlled work zones, including an Exclusion Zone, a Contaminant Reduction Zone (CRZ), and a Support Zone, are required for the task(s) indicated above. Project personnel must not be allowed into the CRZ or Exclusion Zone or the Work Zone until they have received the proper personal protective equipment (PPE) and they have read, understand, and meet the

requirements outlined in this HASP. The Exclusion Zone is defined as the area on site where contamination is suspected and tasks are to be performed. The CRZ is defined as the area where equipment and workers are to be decontaminated as they leave the Exclusion Zone. The Support Zone is defined as the command area and may serve as a staging and storage area for supplies. The location and extent of the work zones may be modified as necessary as site investigation information becomes available. For sites that do not require the three controlled work zones, the area(s) where work is to be performed shall be called the Work Zone.

Visitors to the site may need to be continually escorted for safety purposes and need to check in with the Project's Health and Safety Coordinator upon visiting the site.

For the tasks identified above, the boundaries of the Exclusion Zone, CRZ, and Support Zone, or the Work Zone, shall be marked using appropriate methods, including but not limited to warning tape, signs, traffic cones, fencing, or other appropriate means.

11.5 Site Access

APPLIES TO ALL TASKS

Certain sites require controlled access to the work area. Examples of access controls include sign in/sign out logs, checking in with guards, and donning identification badges. Project personnel will adhere to the site-specific access requirements and monitor that contractors and other visitors abide by site-specific access control requirements.

11.6 Inspections

APPLIES TO ALL TASKS

Based on the hazards identified for the project, periodic health and safety inspections may be performed. The Health & Safety Inspection Checklist records should be kept on file at the project site. Each contractor is responsible for completing their inspection checklist specific to their work activities. The frequency for periodic inspections will be determined by each contractor responsible for the work activities.

12. TAILGATE MEETINGS

APPLIES TO ALL TASKS

Tailgate meetings must be held daily prior to starting work to discuss important health and safety issues concerning tasks to be performed during that shift. Site workers should also communicate

health and safety concerns associated with the tasks they will be performing. Topics discussed in the tailgate meetings must be documented.

13. STOP WORK AUTHORITY

APPLIES TO ALL TASKS

Project personnel and their contractor personnel have the authority and responsibility to issue a Stop Work Order if unsafe actions and/or conditions are identified. The Stop Work Authority (SWA) process involves a stop, notify, correct, and resume approach for resolving observed unsafe work actions or conditions. The person issuing the work stoppage will first notify workers engaged in or affected by the unsafe activity or condition and require that associated work be stopped. After this Stop Work Order is issued, the project manager and the supervisors for affected or concerned contractors will also be notified. The project manager will document the issuance of the Stop Work Order. Work will not resume until the issues and concerns of the Stop Work Order have been adequately addressed.

14. AIR MONITORING

APPLIES TO TASK: ☒① ☒② ☐③ ☐④ ☐⑤ ☐⑥ ☐⑦ ☐⑧ ☐⑨ ☐ Not Applicable

Air monitoring will be performed to evaluate airborne chemical and/or dust exposure levels within the breathing zone of site workers. Hazardous conditions may include concentrations that may cause acute or chronic illness, potential oxygen deficient environments, or potential explosive environments. Air monitoring may also be performed to evaluate the adequacy of engineering, administrative, and/or PPE controls. Air monitoring may be “real-time” (e.g., the instrument provides immediate results at the project), using multi-gas meters, photoionization detectors (PIDs), or colorimetric tubes. Personal monitoring may also be performed by collecting samples and forwarding to a laboratory for analysis and quantification.

The type(s) of air monitoring equipment required and associated action levels are outlined in Appendix D. Monitoring equipment must be calibrated based on the manufacturer’s requirements. Calibration results and air monitoring measurements must be documented. Based on the results noted and site activities or scope of work changes, the frequency of air monitoring may be adjusted on site by project personnel with the consent of the Project Manager and communication with the contractor’s H&S personnel.

15. PERSONAL PROTECTIVE EQUIPMENT

APPLIES TO ALL TASKS

The minimum levels of PPE required for each task are presented in Appendix E. Required equipment and types of protective clothing materials, as well as an indication of the initial level of protection to be utilized, are listed. The level of protection may be upgraded or downgraded by the Project's Health and Safety Coordinator or the contractor's H&S personnel on site according to controls requirements in Appendix Eor according to action levels provided in Appendix D.

If respirators are worn, workers must abide by the requirements of 29 CFR 1910.134.

16. DECONTAMINATION

APPLIES TO ALL TASKS

The Project's Health and Safety Coordinator and Project Manager will determine the type and level of decontamination procedures for both personnel and equipment based on evaluation of specific work activities in the controlled work zones. Medical treatment will take precedence over decontamination in the event of a life threatening and/or serious injury/illness. Personnel will perform decontamination in designated and identified areas upon leaving "hot zones" where the potential exists for exposure to hazardous chemical, biological, or environmental conditions.

Decontamination of personnel in Level D (modified) will consist of proper containerization and disposal of coveralls, disposable boots, and gloves (if applicable).

Decontamination of personnel in Level C, if applicable, will consist, at a minimum, of:

- Removal and cleaning/disposal of boot covers, coveralls, and outer gloves;
- Removal, cleaning, and storage of respiratory protection;
- Washing of non-disposable PPE suspected of being contaminated using a soap solution followed by a water rinse; and
- Removal and disposal of inner gloves.

Hand tools and sampling equipment shall be decontaminated as needed by washing in decontamination basins with appropriate solutions, or, if possible, by dry decontamination. Wash solutions and PPE may require disposal at a licensed waste facility.

17. SPILL CONTAINMENT

APPLIES TO ALL TASKS

The task(s) for this project may involve the handling of drums and/or containers that contain stored chemicals, hazardous materials, and/or wastes. The drums and/or containers may have been spilled/dislodged during site activities due to compromised construction of the drum/container, transportation accidents, improper packaging practices, and improper handling of hazardous materials during on/off loading. Containers shall be inspected and their integrity assured prior to being moved and/or handled. If the integrity of the container is in question, the container shall be over packed or its contents transferred. Operations shall be organized and coordinated to minimize movement of such containers. Where spills, leaks, or ruptures may potentially occur, a supply of sorbents shall be located in the immediate area. Additional preventative measures include:

- UN-approved 55-gallon drums, bins, and/or Baker tanks will be inspected for visible defects upon delivery to the site;
- UN-approved 55-galon drums will also be inspected to ensure each drum includes a resealable lid with a small resealable sampling port near the top, or on the side of the drum and that the enclosure is not deformed and/or distorted;
- Drums will not be completely filled to allow for possible expansion of liquid and will be set on wooden pallets to facilitate transport by forklift;
- The storage area will be inspected to check for leaks weekly while the containers are being filled and immediately after a relocation to a temporary on-site storage area; and
- Flat areas will be selected for temporary storage away from high-traffic work areas/zones and storm/sewer drains.

In the event of an unplanned release or spill of unknown or hazardous substances, the site supervisor will designate personnel who will support the spill containment, control, and/or clean-up procedures. The team will request additional off-site emergency response assistance if necessary based on the type of spill, volume, potential toxicity, etc.

The spill area will be isolated and restricted to only authorized personnel designated to assist with the containment, control, or clean-up activity. Authorized personnel will be trained to contain and clean spills from typical materials and quantities used at the project location. Physical barriers will be set up to warn unauthorized personnel to stay clear and evacuate the affected area. The spill, leak, or incident will be assessed by the team and characterized to determine the appropriate course(s) of action(s) to consider:

- Small spills (i.e., maximum volume of 55 gallons of a liquid or 100 pounds of a solid) may be remediated using absorbent materials by designated personnel;
- Large spills (i.e., liquid volumes > 55 gallons or solid weights > 100 pounds) and/or spills of highly toxic materials may require assistance by off-site hazardous materials (HAZMAT) teams;
- Attempts shall be made to identify and stop the source(s) of spillage immediately while donning proper PPE (based on action levels and the air monitoring program) and performing air monitoring;
- The site supervisor will direct spill-response operations and stay at the spill area until it has been cleaned, inspected, and cleared for re-entry; and
- The site supervisor will prepare a spill incident and clean-up report and will communicate findings to the contractor and client.

18. CONFINED SPACE ENTRY

NOT APPLICABLE

There are no tasks for this project involving confined-space entry.

19. GLOBALLY-HARMONIZED SYSTEM (GHS) FOR HAZARD COMMUNICATION

APPLIES TO ALL TASKS

The following procedures must be followed for chemicals brought onto the site by workers (e.g.., decontamination solution, sampling preservatives, injection solution) while performing the tasks of this project:

- Labels on primary chemical containers must not be defaced;
- Chemicals must be stored in appropriate storage containers;
- Secondary containers and storage cabinets must be correctly and clearly labeled;
- Chemicals incompatible with each other must not be stored together;

- Workers must receive training on the chemical hazards; and
- Safety Data Sheets (SDSs) must be added to Appendix F.

When chemicals are used on site, contractors will comply with provisions of their hazard communication program.

20. HASP AMENDMENTS

Over the course of this project, it is possible that the project-specific hazards and working conditions will change. This HASP may be reviewed and amended as necessary to effectively describe the changing working conditions and measures to mitigate the potential health and safety issues that may arise during the project. Amendments to the HASP should provided in Appendix A and/or additional THAs should be added to Appendix B.

Appendix A: HASP Amendments

Discuss details of amendments to this HASP here. Include amendment number, date, and details of amendments.

Appendix B: Task Hazard Analyses

TASKS			
①	Drilling Oversight and Soil Sampling	⑥	Groundwater Well Monitoring
②	Geophysical Logging	⑦	Aquifer Testing
③	Groundwater Monitoring Well Installation	⑧	Injection Testing Oversight
④	Groundwater Monitoring Well Development	⑨	Mobilization and Demobilization
⑤	Engineering Survey		

THAs for these tasks are presented in the following pages.

TASK HAZARD ANALYSIS (Ver. 2, June 2015)

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Drilling Oversight and Soil Sampling
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County
Description of Task & Worksite:	Drilling Operations (single pass mud rotary, sonic, and hollow stem auger), Lithologic Logging, Core Sample Collection (wireline, pitcher tube, split spoon, and sonic drilling)

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications)*.
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☐ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Soil boring advancement Soil characterization/logging/sampling	Thoroughfares / Traffic	Wear of safety vest, use buddy system to watch for traffic
	Heavy equipment (drill rig)	Avoid area around drill rig when possible, be aware of moving parts/pinch points
	Trip/fall	Use of steel toe boots, be aware and careful on uneven surfaces
	Stinging Insects / Vermin / Snakes	Wear pants and boots; be aware of walking path and potential locations of insects/vermin/snakes; be aware of animals such as dogs on private property
	Utility-related hazards	Perform utility clearance prior to ground penetrations; hand-auger first 5 feet to ensure no underground utilities will be damaged
	Storage of bulk materials	Soil cuttings and water for decomination will be securely stored in 55-gallon drums for disposal
	Exposure to site contaminants	Wear nitrile gloves when handling site material and any equipment that came in contact with site material

A.4. H&S EQUIPMENT LIST

List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

DRAFT

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☒	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☒ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☒	**DECON, PPE DISPOSAL**	☒ Receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, related supplies
		☐ Other:		
☒	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**	List equipment/devices to be brought to worksite; Use in accordance with procedures in Part C: PID to be used to assess potential exposure to chlorinated VOCs in the breathing zone.		

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS RELATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY	☐ Applicable	☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☐	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☐ Pinch points, moving parts ☐ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☐ Extension cords, flexible wire ☐ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☐ Noise ☐ Emissions, discharge gases ☐ Working at heights, falls ☐ Lifting, repetitive motion ☐ Illumination ☐ Electrical	☐ <u>General safety requirements for equipment, machinery:</u> · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☐ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☐ For electrical hazards, see Section B.8., "Electrical Hazards." ☐ Operate fuel-powered equipment in well ventilated location. ☐ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ <u>General safe work practices:</u> · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☐	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☐ <u>Follow general safety practices for Operation of Equipment/Machinery (above), and as follows:</u> · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS (electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
This section applies to single pass mud rotary drilling, sonic drilling, and hollow-stem auger. Always verify that drill rig has sufficient clearance from utility lines before beginning work.

☒	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☒ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☒	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel.

	- injury from mechanical hazards	· Rigging procedures – see Mechanical Lifting, Rigging, below.
☒	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☒ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☒	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.

B.8. ELECTRICAL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☐ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Will hand-auger first 5' to ensure no underground utilities are encountered

☒	**OVERHEAD, ABOVE-GROUND UTILITIES**	☒ Maintain proper clearance, employ other appropriate precautions for the conditions.
☒	**UNDERGROUND UTILITIES**	☒ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☒ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment, soil cuttings, and decon water anticipated.

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier.

		☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.	
☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS**	☒ Describe above any site-specific procedures for spill containment, container handling, as applicable

B.15. RADIATION HAZARDS (Other than Sunlight)	☐ Applicable	☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION	☐ Applicable	☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

PART C – AIR MONITORING, WORKER EXPOSURE MONITORING

C.1. AIR MONITORING (Direct-Reading Instruments) ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**AIR-TESTING PARAMETERS**	☒ VOCs, GASES ☒ PID, Lamp energy: 10.6 eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

		Parameters	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
☒	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	☒ VOCs	< 5 ppm	5 ppm to 25 ppm: Level C (air purifying respirator) > 25 ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< __ mg/m^3	> __ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

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D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Geophysical Logging
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County
Description of Task & Worksite:	Geophysical logging of bore holes using electrically operated downhole logging probes

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications)*.
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☒ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Advancement of spool connected to geophysical logging tooling down boreholes/monitoring wells	Throroughfares / Traffic	Wear safety vest, use buddy system to watch for traffic
	Heavy equipment (geophysical logging tools)	Avoid area around logging equipment when possible, be aware of moving parts/pinch points
	Trip/fall	Use of steel toe boots, be aware and careful on uneven surfaces
	Stinging Insects / Vermin / Snakes	Wear pants and boots; be aware of walking path and potential locations of insects/vermin/snakes; be aware of animals such as dogs on private property
	Exposure to site contaminants	Wear nitrile gloves when handling site material and any equipment that came in contact with site material

A.4. H&S EQUIPMENT LIST

List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☐ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).	

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☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape		☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)
		☐ Other:		
☒	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☒ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☒	**DECON, PPE DISPOSAL**	☒ Receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, related supplies
		☐ Other:		
☒	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**	List equipment/devices to be brought to worksite; Use in accordance with procedures in Part C: PID to be used to assess potential exposure to chlorinated VOCs in the breathing zone.		

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS RELATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY	☒ Applicable	☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Applies to the use of Geophysical logging tools, the attached wires and spool, and portable generator to operate geophysical logging equipment

☒	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☒ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☒ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☒ Pinch points, moving parts ☒ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☒ Extension cords, flexible wire ☒ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☐ Noise ☐ Emissions, discharge gases ☐ Working at heights, falls ☒ Lifting, repetitive motion ☐ Illumination ☒ Electrical	☒ <u>General safety requirements for equipment, machinery:</u> · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☒ For electrical hazards, see Section B.8., "Electrical Hazards." ☒ Operate fuel-powered equipment in well ventilated location. ☐ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ <u>General safe work practices:</u> · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☒	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☒ <u>Follow general safety practices for Operation of Equipment/Machinery (above), and as follows:</u> · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS** **(electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☐ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Heavy equipment refers to geophysical logging tools and portable generator

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel. · Rigging procedures – see Mechanical Lifting, Rigging, below.

☒	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☒ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☒	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☐ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.
B.8. ELECTRICAL HAZARDS	☒ Applicable	☐ Not Applicable, Not Anticipated
EXPLANATORY NOTES, CLARIFICATIONS:		
☒	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☒ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"
B.9. UTILITY RELATED HAZARDS	☒ Applicable	☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**OVERHEAD, ABOVE-GROUND UTILITIES**	☒ Maintain proper clearance, employ other appropriate precautions for the conditions.
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☐ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment is anticipated.

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Anticipated that a gasoline powered generator will be utilized onsite.

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases.

		☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☒ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☐ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.	
☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS**	☒ Describe above any site-specific procedures for spill containment, container handling, as applicable

B.15. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION ☐ Applicable ☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

C.1. AIR MONITORING (Direct-Reading Instruments) ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**AIR-TESTING PARAMETERS**	☒ VOCs, GASES ☒ PID, Lamp energy: 10.6 eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☒	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☒ VOCs	< 5 ppm	5 ppm to 25 ppm: Level C (air purifying respirator) > 25 ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< ___ mg/m^3	> ___ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Groundwater Monitoring Well Installation
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County, CA
Description of Task & Worksite:	Oversight of installation of groundwater monitoring wells.

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications).*
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☒ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Well Installation	Being struck by heavy machinery; becoming caught in pinch points; being exposed to leaking equipment fluid or investigation-derived waste; striking aboveground or underground utilities; slipping/tripping/falling; heat stress; exposure to insects, spiders, and ticks; heavy lifting, and exposure to hazardous chemicals (e.g., site-related chemicals and sample preservatives).	See Below

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A.4. H&S EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☒	**DECON, PPE DISPOSAL**	☒ Receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**			

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☒ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS REALATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY	☒ Applicable	☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☒ Pinch points, moving parts ☒ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☐ Extension cords, flexible wire ☒ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☒ Noise ☒ Emissions, discharge gases ☐ Working at heights, falls ☒ Lifting, repetitive motion ☐ Illumination ☐ Electrical	☒ General safety requirements for equipment, machinery: · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☐ For electrical hazards, see Section B.8., "Electrical Hazards." ☒ Operate fuel-powered equipment in well ventilated location. ☒ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ General safe work practices: · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☐	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS** **(electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

This section applies to single pass mud rotary drilling, sonic drilling, and hollow-stem auger. Always verify that drill rig has sufficient clearance from utility lines before beginning work.

☒	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☒ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☒	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel.

		· Rigging procedures – see Mechanical Lifting, Rigging, below.
☒	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☒ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☒	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.

B.8. ELECTRICAL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☐ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**OVERHEAD, ABOVE-GROUND UTILITIES**	☒ Maintain proper clearance, employ other appropriate precautions for the conditions.
☒	**UNDERGROUND UTILITIES**	☒ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☒ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment, soil cuttings and decon water anticipated.

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier.

		☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☒ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

B.14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.	
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.	
☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS**	☒ Describe above any site-specific procedures for spill containment, container handling, as applicable.

B.15. RADIATION HAZARDS (Other than Sunlight)	☐ Applicable	☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION	☐ Applicable	☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☐ VOCs, GASES ☐ PID, Lamp energy: 9.8 eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< 5 ppm	5 ppm to 50 ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< __ mg/m^3	>__ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Groundwater Monitoring Well Development
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County, CA
Description of Task & Worksite:	Oversight of development of groundwater monitoring wells anddevelopment logging.

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications).*
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☒ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Well Development	Being struck by heavy machinery; becoming caught in pinch points; being exposed to leaking equipment fluid or investigation-derived waste; striking aboveground or underground utilities; slipping/tripping/falling; heat stress; exposure to insects, spiders, and ticks; heavy lifting; pressurized lines; and exposure to hazardous chemicals (e.g., site-related chemicals and sample preservatives).	See Below

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A.4. H&S EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☐	**DECON, PPE DISPOSAL**	☐ Receptacle for disposable PPE	☐ Hand washing provisions	☐ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**			

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☒ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☒ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS REALATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Pumps and pressurized lines will be used for handling well development water.

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☒ Pinch points, moving parts ☒ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☐ Extension cords, flexible wire ☒ Fuel related (gas or liquid) ☒ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☒ Noise ☒ Emissions, discharge gases ☐ Working at heights, falls ☒ Lifting, repetitive motion ☐ Illumination ☐ Electrical	☒ General safety requirements for equipment, machinery: · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☒ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☐ For electrical hazards, see Section B.8., "Electrical Hazards." ☒ Operate fuel-powered equipment in well ventilated location. ☒ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ General safe work practices: · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☐	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS (electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Rig will be used for well development.

☒	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☒ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☒	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Forklift may be required to move investigation-derived waste containers to the proper staging area.

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel. · Rigging procedures – see Mechanical Lifting, Rigging, below.

☒	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☒ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☒	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.
B.8. ELECTRICAL HAZARDS	☐ Applicable	☒ Not Applicable, Not Anticipated
EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☐ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"
B.9. UTILITY RELATED HAZARDS	☒ Applicable	☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:		
☒	**OVERHEAD, ABOVE-GROUND UTILITIES**	☒ Maintain proper clearance, employ other appropriate precautions for the conditions.
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☐ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment, development water, and decon water anticipated.

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☒ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☒ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources.

		☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

B.14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.
☐	**OFF-SITE MIGRATION OF CONTAMINANTS** ☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS** ☒ Describe above any site-specific procedures for spill containment, container handling, as applicable.

B.15. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION ☐ Applicable ☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

PART C – AIR MONITORING, WORKER EXPOSURE MONITORING

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☐ VOCs, GASES ☐ PID, Lamp energy: 9.8 eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< 5 ppm	5 ppm to 50 ppm: Level C (air purifying respirator) > ___ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< ___ mg/m^3	>___ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

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TASK HAZARD ANALYSIS (Ver. 2, June 2015)

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Engineering Survey
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County
Description of Task & Worksite:	Oversee survey subcontractor and use of GPS tool.

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications)*.
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☒ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Oversee survey subcontractor	slipping/tripping/falling; heat stress; exposure to insects, spiders, and ticks; powered equipment	See below
Contractor survey by GPS	slipping/tripping/falling; heat stress; working alone; exposure to insects, spiders, and ticks; powered equipment	See below

A.4. H&S EQUIPMENT LIST

List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☐ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).	
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☐ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)
		☐ Other:	

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☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☐	**DECON, PPE DISPOSAL**	☐ Receptacle for disposable PPE	☐ Hand washing provisions	☐ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**	List equipment/devices to be brought to worksite; Use in accordance with procedures in Part C:		

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☐ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☐ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☒ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS RELATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Surveyor's total station and/or handheld GPS unit are battery-powered. Avoid repetitive lifting of this equipment.

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☐ Pinch points, moving parts ☐ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☐ Extension cords, flexible wire ☐ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☐ Noise ☐ Emissions, discharge gases ☐ Working at heights, falls ☒ Lifting, repetitive motion ☐ Illumination ☒ Electrical	☒ <u>General safety requirements for equipment, machinery:</u> · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☒ For electrical hazards, see Section B.8., "Electrical Hazards." ☐ Operate fuel-powered equipment in well ventilated location. ☐ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ <u>General safe work practices:</u> · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☐	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☐ <u>Follow general safety practices for Operation of Equipment/Machinery (above), and as follows:</u> · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS (electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
This section applies to single pass mud rotary drilling, sonic drilling, and hollow-stem auger. Always verify that drill rig has sufficient clearance from utility lines before beginning work.

☐	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☐ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☐ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel.

	- injury from mechanical hazards	· Rigging procedures – see Mechanical Lifting, Rigging, below.
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☐	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☐	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☐	**PUBLIC AT RISK, SITE SECURITY**	☐ During site operations protect public (overhead protection, barriers, warning signs). ☐ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☐ Lock/secure hazardous materials and/or equipment.
B.8. ELECTRICAL HAZARDS	☒ Applicable	☐ Not Applicable, Not Anticipated
EXPLANATORY NOTES, CLARIFICATIONS: Surveyor's total station and/or handheld GPS unit are battery-powered.		
☒	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☒ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OVERHEAD, ABOVE-GROUND UTILITIES**	☐ Maintain proper clearance, employ other appropriate precautions for the conditions.
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☒ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☐ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☐ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☐ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier.

		☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☐	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☐ Vehicle/equipment exhaust ☐ Other	☐ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.	
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.	
☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☐	**SPILL CONTAINMENT, CONTAINERS**	☐ Describe above any site-specific procedures for spill containment, container handling, as applicable

B.15. RADIATION HAZARDS (Other than Sunlight)	☐ Applicable	☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION	☐ Applicable	☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☒ VOCs, GASES ☒ PID, Lamp energy: 10.6 eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

		Parameters	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	☒ VOCs	< 5 ppm	5 ppm to 25 ppm: Level C (air purifying respirator) > 25 ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< ___ mg/m^3	> ___ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

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D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Groundwater Well Monitoring
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County, CA
Description of Task & Worksite:	Oversee subcontractor measuring depth to groundwater and collecting groundwater samples from monitoring wells.

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications).*
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☒ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel listed in Part A.1.

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Gauge water levels and sample groundwater monitoring wells using low-flow and minimal drawdown methodology	Hazardous chemicals, pump and vehicle hazards, heat stress, insects/spiders/ticks, traffic obstruction	See below

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A.4. H&S EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☐ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☒	**DECON, PPE DISPOSAL**	☒ Receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**			

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☐ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS REALATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY	☐ Applicable	☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☒ Pinch points, moving parts ☒ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☒ Extension cords, flexible wire ☐ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☐ Noise ☐ Emissions, discharge gases ☐ Working at heights, falls ☐ Lifting, repetitive motion ☐ Illumination ☐ Electrical	☒ <u>General safety requirements for equipment, machinery:</u> · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☐ For electrical hazards, see Section B.8., "Electrical Hazards." ☒ Operate fuel-powered equipment in well ventilated location. ☒ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ <u>General safe work practices:</u> · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☐	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☐ <u>Follow general safety practices for Operation of Equipment/Machinery (above), and as follows:</u> · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS** **(electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☐ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Forklift may be used to move drums of investigation-derived waste to the staging area.

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel.

		· Rigging procedures – see Mechanical Lifting, Rigging, below.
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☐	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.
B.8. ELECTRICAL HAZARDS	☐ Applicable	☒ Not Applicable, Not Anticipated
EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☐ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OVERHEAD, ABOVE-GROUND UTILITIES**	☐ Maintain proper clearance, employ other appropriate precautions for the conditions.
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☐ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment and purged groundwater anticipated.

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Alconox or similar will be used for decontamination of non-dedicated sampling equipment.

☒	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☒ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☒ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources.

		☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

B.14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.
☐	**OFF-SITE MIGRATION OF CONTAMINANTS** ☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS** ☒ Describe above any site-specific procedures for spill containment, container handling, as applicable.

B.15. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION ☐ Applicable ☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☐ VOCs, GASES ☐ PID, Lamp energy: 9.8 eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< 5 ppm	5 ppm to __ ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< __ mg/m^3	> __ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

DRAFT

TASK HAZARD ANALYSIS

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Aquifer Testing		
Project Name:	Omega Superfund Site OU2	**Project Number/Org:**	WR2209/1633
Project Address:	Los Angeles County		
Description of Task & Worksite:	- Install new pump and piping (remove existing pump, if applicable) - Transducers will be deployed - Perform 48 hour aquifer test - Collect groundwater samples - Remove new pump and restore well to previous conditions		

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications)*.
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☐ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel listed in Part A.1.

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Oversight of pumping test activities	Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, fuel hazards; Manual lifting; Working near heavy equipment; Vehicle/equipment exhaust; Slipping/tripping/falling; Eye injury; Heat stress; Electrical shock; Wet surfaces; Site security; urban environment.	Follow safe work practice as described below (e.g. Non-essential personnel to stay clear of work zone during mobilization). Wearing PPE (protective clothing,steel toe boots, eye protection, hearing protection, hard hat, high visibility vest) Access, work zone, and storage areas identified and protected; Staying Hydrated; Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool; Position outdoor personnel upwind of exhaust source; Make sure proper spill kit and secondary containment measures are taken as needed.

Deployment and retrieval of transducers	Struck by vehicle traveling in thoroughfare.	Wearing PPE (protective clothing,steel toe boots, eye protection, high visibility vest); Use DOT signal devices to re-route vehicles around work area.
Groundwater sample collection	Struck by vehicle traveling in thoroughfare.	Wearing PPE (protective clothing,steel toe boots, eye protection, high visibility vest);

A.4. H&S EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☒	**DECON, PPE DISPOSAL**	☒ Receptacle for disposable PPE	☒ Hand washing provisions	☒ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**	List equipment/devices to be brought to worksite; Use in accordance with procedures in Part C:		

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☒ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted. See HS-502-*Manual Hand Tools* for additional Information.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.

☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.
☐	**WATER TRANSPORTATION**	☐ Follow HS 312 "Water Transportation Safety," and Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS REALATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☐ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.

☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☐ Pinch points, moving parts ☐ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☒ Extension cords, flexible wire ☒ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☒ Noise ☒ Emissions, discharge gases ☐ Working at heights, falls ☒ Lifting, repetitive motion ☒ Illumination ☒ Electrical	☒ General safety requirements for equipment, machinery: · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☒ For electrical hazards, see Section B.8., "Electrical Hazards." ☒ Operate fuel-powered equipment in well ventilated location. ☒ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ General safe work practices: · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.

☒	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☒ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."
☐	**PORTABLE HEATERS** **(electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☐ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks.

		· Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed (HS 506) prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel. · Rigging procedures – see Mechanical Lifting, Rigging, below.
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ^{3} 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ^{3} 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☐	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.
B.8. ELECTRICAL HAZARDS	☒ Applicable	☐ Not Applicable, Not Anticipated
EXPLANATORY NOTES, CLARIFICATIONS:		

☒	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☒ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OVERHEAD, ABOVE-GROUND UTILITIES**	☐ Maintain proper clearance, employ other appropriate precautions for the conditions.
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☐ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment, extracted groundwater, and decon water anticipated.

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Alconox or similar will be used for decontamination of non-dedicated sampling equipment.

☒	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☒ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☒ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

B.14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos

☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.	
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.	
☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS**	☒ Describe above any site-specific procedures for spill containment, container handling, as applicable.

B.15. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION ☐ Applicable ☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

PART C – AIR MONITORING, WORKER EXPOSURE MONITORING

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☐ VOCs, GASES ☐ PID, Lamp energy: __ eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< __ ppm	__ ppm to __ ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< __ mg/m^3	>__ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

TASK HAZARD ANALYSIS (Ver. 2, June 2015)

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Injection Testing Oversight
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County
Description of Task & Worksite:	Oversee the implementation of a series of injection tests to evaluate feasible injection rates and pressures.

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications)*.
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☐ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
Perform Injection Testing	Construction Activities Vehiclular Traffic	A combination of warning tape, fencing, bollards will be placed around the work area to establish an exclusion zone and protect workers from ongoing construction activities
	Slips, Trips, and Falls, primarily due to uneven ground, well vaults, hoses, berms, manholes	Use of steel toe boots, pay close attention to foot placement; slow deliberate movement – do not hurry. Known trip hazards include berms, ramps, hoses, well vaults and manholes. Mark or flag hard-to-see objects on the ground that may be a hazard.
	Manual lifting	Use proper lifting techniques (flex at the knees and use legs when lifting). Avoid lifting more than 50 pounds. Use the buddy system.
	Heavy Equipment (drill rig)	Avoid area around rig when possible, be aware of moving parts/pinch points

A.4. H&S EQUIPMENT LIST

List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

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EXPLANATORY NOTES, CLARIFICATIONS: Non-routine PPE used during injection testing for protection against contact with injection amendments				
☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses plus face shield	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☒ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☒	**DECON, PPE DISPOSAL**	☐ Receptacle for disposable PPE	☐ Hand washing provisions	☐ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**	List equipment/devices to be brought to worksite; Use in accordance with procedures in Part C:		

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☒ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted. See HS-502-*Manual Hand Tools* for additional Information.
☒ ***Working near*** **powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of*** **powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Transport of materials/amendments needed for injection testing

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.

☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.
☐	**WATER TRANSPORTATION**	☐ Follow HS 312 "Water Transportation Safety," and Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS REALATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.

☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☒	**OPERATION OF EQUIPMENT/MACHINERY** ☒ Point-of-operation hazards ☒ Pinch points, moving parts ☒ 'Struck-by,' 'caught between' ☒ Hot surfaces, heat ☒ Extension cords, flexible wire ☒ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☒ Noise ☐ Emissions, discharge gases ☐ Working at heights, falls ☒ Lifting, repetitive motion ☐ Illumination ☒ Electrical	☒ General safety requirements for equipment, machinery: · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☒ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☒ For electrical hazards, see Section B.8., "Electrical Hazards." ☒ Operate fuel-powered equipment in well ventilated location. ☐ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.

☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ General safe work practices: · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☒	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☒ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."
☐	**PORTABLE HEATERS (electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

Drilling to install injection locations to conduct testing

☐	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☐ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

Heavy equipment to conduct testing and drill locations. Forklift required for transportation of amendments and materials

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers - injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed (HS 506) prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. · Keep area beneath suspended loads clear of personnel. · Rigging procedures – see Mechanical Lifting, Rigging, below.
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☒	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☒ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☐	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.

B.8. ELECTRICAL HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☒ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	
☒	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**OVERHEAD, ABOVE-GROUND UTILITIES**	☒ Maintain proper clearance, employ other appropriate precautions for the conditions.
☐	**UNDERGROUND UTILITIES**	☐ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☐ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards.

	☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Materials, amendments, and equipment will be stored onsite

☒	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☒ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☒ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☒ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Injection Amendments

☒	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☒ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☒ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☐	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☐ Vehicle/equipment exhaust ☐ Other	☐ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

B.14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒ **FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:**

- Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ)
- Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard.
- Include site map/figure depicting work locations and other relevant site-specific information.
- Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience.
- Site supervisor(s) required to have 8-hr. Supervisor training.
- Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable.
- Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response.
- Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

IMPORTANT: Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.

☐ **FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER**

- Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information
- Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate.
- Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.

☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS**	☒ Describe above any site-specific procedures for spill containment, container handling, as applicable.

B.15. RADIATION HAZARDS (Other than Sunlight) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION ☐ Applicable ☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☐ VOCs, GASES ☐ PID, Lamp energy: __ eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< __ ppm	__ ppm to __ ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< __ mg/m^3	> __ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Mobilization and Demobilization
Project Name:	Omega Superfund Site OU2
Project Address:	Los Angeles County
Description of Task & Worksite:	Traveling to and from site, entering and leaving site, mobilization and demobilization.

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications)*.
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☐ 2-Way Radio ☐ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☒ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Suggested Nearest Emergency Medical Services	Hospital Name: Presbyterian Intercommunity Hospital Address: 12401 Washington Boulevard, Whittier, California 90602 Phone #: (562) 698-0811 ☒ See Directions in HASP
Suggested Non-Emergency Urgent Care	Facility Name: Urgent Care America, Inc. Address: 13470 Telegraph Road, Whittier, CA 90605 Phone #: (562) 906-7766 ☒ See Directions in HASP
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Rally point will be determined by the contractor carrying out the task.
Special Emergency Equipment/Procedures	None

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel (*to be listed in Part A.1 by contractor*)

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS

Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable:

WORK STEPS	HAZARDS	CONTROLS
1. Travel to site	Traffic Car trouble	Defensive driving while operating work vehicle. Have access to a mobile phone in case of an emergency. Hand-held devices shall not be used when vehicle is in motion. Have valid US identification on their person when traveling in a vehicle. Have a valid US driver's license and the vehicle shall have up to date insurance and registration in the glove compartment if operating a vehicle.
2. Entering Site	Site Security Driving	Project personnel shall meet with site security officers at a pre-designated location to sign in and hold a safety briefing. Drivers shall not exceed a maximum speed of **5 MPH** unless a slower speed limit is posted, has been verbally conveyed during a safety briefing, or a written/electric notice has been distributed before entering the site.

3. Pre-mobilization	Location hazards	Project personnel shall assess the pre-selected work locations for safety. Items to note include but are not limited to: - Overhanging wires within 25 ft of full mast height - Active rails - Open roads - Steep or unstable slopes - Soft ground - Thick underbrush - Marked Utilities - Potential Slips, Trips, and Falls - Poisonous plants and animals
	Potential Slips, Trips, and Falls	Areas of soft ground, steep/unstable slopes, or potential slips, trips, and fall hazards shall be marked and/or taped off to bring attention to personnel on-site prevent entrance to that area and reduce the hazard.
4. Mobilization	Security of Staging Area	Trailers, cars, and truck beds shall be locked and equipment not being used shall be securely tied down to prevent tampering by passersby. Staging area may be blocked off with vehicles, cones, tape, or temporary fencing if deemed necessary.
	Driving rig	Only lead driller may operate rig in motion. Lead driller may only drive rig while in a seated position.
	Heavy vehicle rolling down slope or sliding in mud	Lead driver shall maintain eye contact with his/her team while mobilizing. All other personnel shall stand at least 20 ft uphill or 20 ft in front of the vehicle while team is mobilizing.
	Driver hitting personnel with heavy vehicle	All personnel shall be wearing PPE mentioned below except for earplugs so they can hear instructions from lead driver. All personnel shall provide 20 ft of clear space for vehicle when vehicleis in motion. All personnel shall remain in lead driver's sight when vehicle is in motion.
	Rig hitting overhanging cables	Team shall identifying low-hanging cables prior to mobilization and shall not pass under them if the mast is within 25 feet of the wires (active or inactive)- an alternative route will be determined.
5. Demobilizing	Heavy vehicle rolling down slope	Lead Driver shall maintain eye contact with his/her team while demobilizing. All other personnel shall stand at least 20ft uphill or in front of the vehicle while team is demobilizing. All personnel shall be wearing PPE mentioned below except for earplugs so they can hear all directions/instructions from lead driver.
	Driver hitting personnel with heavy vehicle	All personnel shall provide 20 ft of clear space for vehicle when vehicleis in motion. All personnel shall remain lead driver's sight when vehicle is in motion.
	Rig hitting overhanging cables	Team shall identifying low-hanging cables prior to mobilization and shall not pass under them if the mast is within 25 feet of the wires (active or inactive)- an alternative route will be determined.
6. Leaving Site	Site Security	All gates and buildings will be securely locked if not within vision of on-site personnel.

7. Traveling from Site	Traffic Car trouble	Defensive driving while operating work vehicle. Have access to a mobile phone in case of an emergency. Hand-held devices shall not be used when vehicle is in motion. Have valid US identification on their person when traveling in a vehicle. Have a valid US driver's license and the vehicle shall have up to date insurance and registration in the glove compartment if operating a vehicle.

A.4. H&S EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☒ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☐ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☒ Fire extinguisher ☐ Emergency eyewash bottle(s) ☐ Insect control (repellant, wasp spray, other) ☒ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☐ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☒ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI	☐ Lockout/tagout equipment	☐ Ventilation equipment (fan, blower)
		☐ Eyewash - 15 min. flow	☐ Emergency deluge shower	☐ Air horn, alarm
		☐ Other:		
☐	**DECON, PPE DISPOSAL**	☐ Receptacle for disposable PPE	☐ Hand washing provisions	☐ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**	List equipment/devices to be brought to worksite; Use in accordance with procedures in Part C:		

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☒ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☒ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☐ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools -** proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools -** Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted.
☒ ***Working near* powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of* powered tools/equipment/machinery – See Section B.5.**

Security– Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☐ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience.
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.
☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☒ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☒ Use DOT-trained flaggers or police detail where appropriate or required.
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work.

☐	**WATER TRANSPORTATION**	☐ Follow Section B.3., "Water/Boating Hazards."
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work.
☒	**TRAFFIC/VEHICLE HAZARDS RELATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☒ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**OPERATOR OF WATER CRAFT OR PASSENGER/WORKER ON WATER CRAFT OR PLATFORM** Hazards: Drowning, hypothermia, collision, motor/fuel hazards, navigation	☐ Wear regulatory-approved personal flotation device (PFD) or buoyant work vest. ☐ Bring emergency rescue equipment (ring buoy, reaching device, flares). Use "reach, throw, row, go" strategy. ☐ Use fuel safety practices, fire extinguisher present in boat. ☐ Have lifesaving skiff/boat available. ☐ Monitor weather, develop float plan, ensure navigation/communication equipment operable. ☐ For tidal, flash flood, dam release hazards, plan/locate work accordingly, other precautions as appropriate. ☐ Where ice/slip hazards are present adjacent to water body, and for working directly on ice over water, wear ice creepers, sand work area, or take other appropriate measures to address slip hazard. ☐ For high-hazard work over very cold water, have immersion survival suit available, as appropriate. ☐ For electrical hazards associated with water/wet locations, see Section B.8., "Electrical Hazards."
☐	**WORK NEAR WATER HAZARDS OR ENTERING WATER** Hazards: drowning, hypothermia from water immersion, related injuries. ☐ Wading, wetland, mud/silt ☐ Dam release, flash flood, tide ☐ Diving ☐ Ice on/near water body	

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**WORKING AT HEIGHTS (GENERAL)** Hazards: Falls, overhead hazards, impalement hazard (such as from falling onto unprotected rebar and similar)	*General fall protection requirement thresholds: required @ ≥4' (industry), ≥6' (construction), ≥10' (scaffolds)* ☐ Ensure guardrails present ☐ Use personal fall apparatus (PFA) ☐ Use tether or positioning device ☐ Restrict access to hazard (barriers, tape, sign) ☐ Ensure covers in place over holes ☐ Use designated "watch person" ☐ Use fall protection net ☐ Restrict access beneath work to protect other site personnel from overhead hazards ☐ Ensure safe access to elevated work location (ladder, stair,) ☐ Install caps on protruding rebar
☐	**LADDERS / STAIRS** ☐ Extension/straight ladders ☐ Step ladders ☐ Fixed ladders ☐ Stairs Hazards: Falls, overhead hazards	☐ Follow safe work practices: · Use ladders according to safe practices and manufacturer's instructions. · Maintain 3 points of contact at all times on ladder; keep center of gravity within side rails. · Do not use metal (conductive) ladder near electrical hazard. · Extension/straight ladders shall be properly footed, secured, angled, extend above upper work surface. · Stepladders are set on level ground or properly shimmed, spreaders locked; do not climb/stand on top step, top cap, or rear non-climbing side; use step ladder of sufficient length for work. · Equip stairs with stair-rails where more than 4 steps, and for stairway height 4' or more.
☐	**SCAFFOLD** ☐ Supported scaffold ☐ Suspended scaffold ☐ Free-standing/mobile scaffold Hazards: Falls, overhead hazards, equipment collapse.	☐ Follow safe work practices: · Identify/coordinate operations with subcontractor's competent person. · Supported scaffold level, stable, proper attachments, tiebacks, planking, · Suspended scaffolds anchored properly. · Guardrails or personal fall apparatus required above 10 feet. · Proper means of accessing scaffold (proper ladders, stair tower). · Total height of free-standing scaffold not to exceed four times the minimum base dimension. · Do not exceed load limits; store/stage materials in quantities sufficient for immediate use.
☐	**AERIAL LIFT** Hazards: Falls, overhead hazards, struck-by, run-over, caught between (pinch points), tip over, fluid leaks.	☐ Follow safe work practices: · Operators to be sufficiently trained, experienced and qualified. · Equipment is inspected after mobilization and is in good condition. · Harness & lanyard worn whenever operating the lift (possible exception for scissor lifts). · Overhead and surface obstructions to be reviewed with operators prior to use.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY ☐ Applicable ☒ Not Applicable, Not Anticipated		
EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**POWERED HAND TOOLS** ☐ Battery-operated ☐ Electric-powered, 120v/240v ☐ Fuel-powered ☐ Pneumatic ☐ Powder-actuated Hazards: Eye/hand/body injury, fuel-related hazards, Inhalation hazards, noise, sparks, heat, fire hazard, electrical hazards	☐ For all power tools: · Inspect tools to ensure safe operating condition before each use. · Use tool in accordance with manufacturer's specifications. · Ensure guards are in place and no hazardous equipment modifications. · Use PPE or other safety practices, as appropriate, for eye/hearing/hand/head/body protection. · Provide training or verify operator competency for use of power tool. · Stay clear of hazard zone, "line of fire," when working near where power tools are used. · For spark/heat generating tool, control fire hazards, segregate combustible/flammable materials. · Use vise/clamp/work bench or other appropriate means to hold/secure the work piece. ☐ Use respirators, ventilation, wet methods, other appropriate means to control inhalation hazard. ☐ See fuel-safety practices in Section B.13., "Commercial Chemical Products." ☐ For electrical hazards, see Section B.8., "Electrical Hazards".
☐	**OPERATION OF EQUIPMENT/MACHINERY** ☐ Point-of-operation hazards ☐ Pinch points, moving parts ☐ 'Struck-by,' 'caught between' ☐ Hot surfaces, heat ☐ Extension cords, flexible wire ☐ Fuel related (gas or liquid) ☐ Hydraulic pressure ☐ Pneumatic pressure ☐ Kinetic, stored energy ☐ Noise ☐ Emissions, discharge gases ☐ Working at heights, falls ☐ Lifting, repetitive motion ☐ Illumination ☐ Electrical	☐ General safety requirements for equipment, machinery: · Arrange worksite for safe access to equipment/machinery. · Use equipment/machinery in accordance with manufacturer's use and safety instructions. · Ensure point-of-operation, mechanical power transmission, other moving parts are guarded with protective devices; do not override interlocks, guards, protective devices. · Secure long hair/loose clothing/hanging jewelry near moving/rotating parts. · Heed warning signs/labels, keep safe distance; avoid locations of "struck by" and "caught between" hazards. · Implement lockout/tagout for repairs/adjustments/tooling changes. ☐ Use safe lifting practices for movement of heavy portable equipment ☐ Implement safe work practices for compressed air, pressurized systems (pneumatic/hydraulic), stored energy. ☐ For climbing/fall hazards associated with large equipment, see Section B.4., "Fall Hazards." ☐ For electrical hazards, see Section B.8., "Electrical Hazards." ☐ Operate fuel-powered equipment in well ventilated location. ☐ Use safe practices for fuels, see Section B.13., "Commercial Chemical Products."
☐	**LOCKOUT/TAGOUT OF HAZARDOUS ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☐	**WELDING, CUTTING, HOT WORK (GAS OR ARC)** UV/IR light-eye/skin burns, hot-work hazards, toxic welding fumes, compressed gases, electrical shock	☐ General safe work practices: · Hot work permit system to be implemented. · Operator properly protected (eye protection, clothing, apron, etc.). · Fire hazard controls (watcher, fire extinguisher, water, isolate combustibles). · Protect nearby personnel from hazardous UV, IR light (shielding, curtain). ☐ For gas welding/cutting, use gas cylinder safe practices (secured, upright, caps on when not in use, prevent Damage; never secure gas cylinders to metal bench used for arc welding). ☐ For arc welding, follow electrical safe work practices. See Section B.8., "Electrical Hazards." ☐ See Section B.13., "Commercial Chemical Products," for hazards of welding rods (toxic metals), welding gases.
☐	**COMPRESSED AIR, COMPRESSOR** (for compressed gases, see Section B.13., "Compressed Gases")	☐ Never direct nozzle toward body; do not use compressed air for cleaning clothes. ☐ If compressed air is used for cleaning, restrict pressure to 30 psi or below, equip nozzle with chip guard. ☐ Use eye protection. ☐ Ensure air tank, hoses, fittings are in good repair using factory fittings.
☐	**PORTABLE GENERATOR** Hazards: Electrical shock, carbon monoxide in exhaust, fuel-related fire, injury from mechanical hazards, lifting	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Use in accordance with manufacturer's instructions. · Keep generator and work area dry. · Never use indoors, or near building air intake vents due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Use hearing protection in close proximity to operating generator, as needed. · Use power cords/extension cords specified by instructions. · Use ground-fault circuit interrupters (GFCIs) in accordance with manufacturer's instructions. · See Section B.8., "Electrical Hazards." · Shut down equipment before refueling. See safe practices for flammable/combustible liquids in Section B.13., "Commercial Chemical Products."

☐	**PORTABLE HEATERS (electric or fuel powered)** Hazards: Electric-powered: Electrical shock, fires from hot surfaces. Fuel powered: Carbon monoxide in exhaust, fires from hot surfaces, fuel-related fires	☐ Follow general safety practices for Operation of Equipment/Machinery (above), and as follows: · Keep heater dry, and locate heater on level surface away from high traffic areas. · Never use fuel-powered heaters indoors, or near air intake vents, due to carbon monoxide hazard. · Provide for ventilation and/or air monitoring where hazardous accumulation of exhaust emissions is possible. · Keep combustible materials at least 3 feet from hot surfaces. · Do not use an extension cord or power strip to power an electric heater. · For electric heaters, See Section B.8., "Electrical Hazards." · Shut down fuel-powered equipment before refueling. See safe practices for flammable/combustible liquids and/or compressed gases in Section B.13., "Commercial Chemical Products."

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

This section applies to single pass mud rotary drilling, sonic drilling, and hollow-stem auger. Always verify that drill rig has sufficient clearance from utility lines before beginning work.

☐	**DRILLING** Hazards: Struck-by, run-over, caught between (pinch points), manual lifting, roll over, fluid leaks, fuel hazards, suspended equipment	☒ Follow safe work practices, as applicable: · Non-essential personnel to stay clear of drilling work zone when drill rig in operation. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Establish eye contact with operator and use hand signals prior to approaching near equipment. · PPE used near operating rig (eye/head/hearing/hand/foot protection, high visibility vests or equivalent). · Contractor inspects drill rig daily before use, verify daily that emergency stop is functional. · Drill rig to be equipped with operational emergency stop, equipment in good repair, machine guards in place, whip checks on high pressure lines. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Operators/helpers maintain safe distance from moving parts; secure loose hair, loose clothing, equipment. · Drill rigs will only be moved with masts lowered. · Max. safe slope for rig will be followed, drill rig leveled, appropriate blocking/cribbing as needed. · Use safety practices for refueling, fuel handling/storage/transport. · Spill equipment is available for fuel and hydraulic fluid leaks. · Verify mechanical lift/rigging equipment (cables, sheaves, boom, attachments) is in proper working order. · Ventilate and conduct air monitoring, as appropriate, when drilling indoors.
☐	**IMPORTANT!** This work may/will include close proximity to overhead electric utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☒ Follow general safe work practices for heavy equipment: · Trained/qualified persons operate all heavy equipment. · Do not get into a potential crush situation below or between equipment, or in an excavation. · No passengers on moving/operating equipment except where passenger seat/restraint is present. · Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. · Leaks or defective safety equipment should be repaired before use. · Operators required to use seatbelts. · Maintain eye contact with operator and use hand signals prior to approaching near equipment. · High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. · Maximum safe slope for each vehicle will be followed. · Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. · Spill equipment available for fuel and hydraulic fluid leaks. · Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. · Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. · Mark temporary roadways clearly, provide berms/stop logs where needed.
☐	**CRANES** Hazards: - electrocution by overhead utility - injury in swing radius - injury from falling load - crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Only qualified persons operate cranes (certificate required). · Critical Lift Plan & Checklist prepared/executed prior to mobilization. · Equipment to be inspected prior to mobilization and daily by crane operator. · Crane operator will remain at the controls at all times during operation. · Crane operation must be performed under the direction of an appointed signal person at all times. · Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment.

	– injury from mechanical hazards	· Keep area beneath suspended loads clear of personnel. · Rigging procedures – see Mechanical Lifting, Rigging, below.
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment and cranes (above), as applicable: · Coordinate lifting operations with competent person. · Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. · Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. · Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. · Hooks will be equipped with safety latches. · Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use.
☐	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☐ In addition to general safety practices for heavy equipment (above), as applicable: · Qualified operator, per established forklift training (certificate is required). · Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. · Do not exceed lifting load limits. · Forklift shall not be moved/driven with empty forks in raised position. · When not in use, forks lowered, brake set, controls in neutral, key removed.
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards"
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: · Activities under supervision/oversight of competent person, daily inspection. · Excavated materials placed at least 2' from trench sidewall. · Prevent water accumulation in trench. · Sloping & shoring for excavations ³ 20' must be approved by a professional engineer. · Sloping/shoring/trench box for excavations ³ 5' when persons enter trench/excavation. · Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . · Workers in trenches to be within 25 feet of ladder or sloped entryway. · Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. · If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces"
☒	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan.
☐	**BLASTING**	☐ Develop/implement blasting safety plan.
☒	**PUBLIC AT RISK, SITE SECURITY**	☒ During site operations protect public (overhead protection, barriers, warning signs). ☒ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☒ Lock/secure hazardous materials and/or equipment.

B.8. ELECTRICAL HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**BASIC ELECTRICAL HAZARDS TO SKILLED NON ELECTRICAL WORKERS** Equipment/tool use/operation, use of extension cords, working near electrical equipment. Hazards: Electrical shock, secondary hazards (falls, other injuries).	☐ Follow safe work practices: · Control water-related/wet-location hazards in a manner appropriate for the job tasks/equipment/tool. · Never touch electrical equipment if you are wet, or standing in water or on wet surfaces. · Use extension cords/power cords properly, prevent damage, take out of service if damaged. · Inspect tool/equipment/extension cords/power cords/welding cables before each use; do not use if damaged. · Use GFCI-protected outlet or portable GFCI in wet locations, outdoors, basements, concrete floors. · Ensure live parts are guarded, enclosures secure. · Enclosures, circuits properly labeled.
☐	**HANDS-ON ELECTRICAL WORK BY ELECTRICAL WORKER/TECHNICIAN:** ☐ Voltage < 50 v ☐ Voltage 50-600v ☐ Voltage > 600v ☐ AC ☐ DC ☐ 3-phase ☐ Battery and/or solar power ☐ Capacitor/transformer	☐ Implement electrical safe work practices pertaining to: · Worker training/qualification (Level 1, Level 2, Level 3) · General electrical safe work practices, grounding, use of GFCIs · Safe work practices during diagnostics/troubleshooting, maintenance, repair · Safe design features for electrical equipment · Arc flash protection
☐	**LOCKOUT/TAGOUT OF ELECTRICAL ENERGY**	☐ Implement control-of-hazardous-energy practices (lockout/tagout), provide lockout/tagout locks and devices, training workers, designate "authorized" personnel, notify "affected" personnel.
☒	**IMPORTANT!** This work may/will include close proximity to electric utility lines.	☒ Follow safe work practices per Section B.9., "Utility Related Hazards"

B.9. UTILITY RELATED HAZARDS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Will hand-auger first 5' to ensure no underground utilities are encountered

☒	**OVERHEAD, ABOVE-GROUND UTILITIES**	☒ Maintain proper clearance, employ other appropriate precautions for the conditions.
☒	**UNDERGROUND UTILITIES**	☒ Confirm appropriate underground utility clearance procedures have been completed prior to ground penetrations, and employ other utility clearance/locator practices, as appropriate for conditions. ☒ Hand digging or vacuum post-holing within 3' of utility locations or other high risk condition.

B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**CONFINED SPACE(S)** Potential/actual hazards: ☐ Atmospheric hazards: ☐ Flammable/explosive ☐ Oxygen deficiency ☐ Hydrogen sulfide ☐ Other toxic ☐ Combustible dust ☐ Electrical ☐ Mechanical, engulfment, entrapment, stored energy	☐ Develop effective site-specific entry procedure **per applicable regulatory requirements**: · Personnel to be trained/qualified. · Hazards properly characterized · Use equipment necessary for safe entry (for access, retrieval, PPE, air monitoring, ventilation) · Develop measures for emergency rescue, as applicable. · IMPORTANT: - Describe site-specific safety measures above in Explanatory Notes, Clarifications - Modify this THA or attach separate confined space safety plan/permit, as appropriate ☐ Protect non-entry personnel working near confined spaces thru control measures to prevent unauthorized entry (such as safety orientation, labeling, delineation, barriers)
☐	**HAZARDOUS ENCLOSED OR INDOOR SPACE(S)** ☐ Indoors (occupied or vacant) ☐ Machine/equipment pit/vault ☐ Basement/crawl space ☐ Tunnel, shaft, gallery ☐ Trench, excavation ☐ Hazardous exhaust or emissions ☐ Building-related hazards	☐ Use personal protective clothing to protect from chemical, physical, biological hazards. ☐ Use respiratory protection, if necessary/appropriate. ☐ Duct equipment exhaust to outdoors using passive duct or active exhaust ventilation. ☐ Use fans, blowers or other effective means of ventilation to introduce fresh air/dissipate atmospheric hazards. ☐ Conduct air monitoring, as appropriate for conditions and hazards (see Part C, "Air Monitoring"). ☐ For a trench/excavation, also see subsection entitled "Trenching/Excavation" in Section B.7. "Construction, Heavy Equipment, Lift Equipment." ☐ If space classified/regulated as a "confined space," follow confined space entry requirements (above).

B.11. STORAGE OF BULK MATERIALS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Storage of equipment, soil cuttings, and decon water anticipated.

☐	**STORAGE OF BULK MATERIALS** (for Storage of Hazardous Materials, See Section B.13.)	☐ Store materials in stable manner (stacked, racked, blocked, interlocked, tied, wrapped, or otherwise secured) to prevent tipping, sliding, rolling, falling or collapse. ☐ Do not exceed load limits of racks, platform, scaffold; ensure racks are stable, robust, secure. ☐ Ensure stored materials do not block aisles, passageways.

B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☐ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program.

B.13. COMMERCIAL CHEMICAL PRODUCTS ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☐ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☐ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier.

		☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases. ☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☐	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☐ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☒	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☒ Vehicle/equipment exhaust ☐ Other	☒ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:
Main site COCs include chlorinated VOCs, 1,4-dioxane, and hexavalent chromium.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☒ Soil/groundwater contaminants (historical release)	☐ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☒ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☒ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☒ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☒ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☒ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☐ Potential for flammable vapors	☒ Other (see Explanatory Notes, above)
☐ Explosive dust	☐ Potential for flammable gas (methane)	

☒	**FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:** - Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ) - Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard. - Include site map/figure depicting work locations and other relevant site-specific information. - Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience. - Site supervisor(s) required to have 8-hr. Supervisor training. - Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable. - Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response. - Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring"). **IMPORTANT:** Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.	
☐	**FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER** - Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information - Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate. - Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.	
☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☒	**SPILL CONTAINMENT, CONTAINERS**	☒ Describe above any site-specific procedures for spill containment, container handling, as applicable

B.15. RADIATION HAZARDS (Other than Sunlight)	☐ Applicable	☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**NON-IONIZING RADIATION**	Describe hazards & safety measures above in Explanatory Notes, Clarifications. Conduct exposure monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION	☐ Applicable	☒ Not Applicable, Not Anticipated

MODE(S) OF TRANSPORT:	☐ Road	☐ Rail	☐ Air	☐ Sea	☐ Inland Waterway	☐ International

IMPORTANT: Ensure that each individual who will be involved in shipping/transportation of hazardous material is current with required training (awareness, function-specific, safety, security) in accordance with applicable regulatory authority (DOT, FAA, IATA, TDG), and ensure adherence to applicable regulations.

EXPLANATORY NOTES, CLARIFICATIONS:

PART C – AIR MONITORING, WORKER EXPOSURE MONITORING

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ Applicable ☒ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☐	**AIR-TESTING PARAMETERS**	☐ VOCs, GASES ☐ PID, Lamp energy: __ eV ☐ FID ☐ Carbon monoxide ☐ Hydrogen sulfide ☐ Oxygen (O_2)	☐ Flammable gas (LEL) ☐ Particulate (dust) ☐ Calibration kit for each parameter ☐ Other:

☐	**ACTION LEVELS FOR O2/LEL**	☐ Oxygen	≤19.5% - ventilate to raise O_2 to acceptable levels, or use Level B. ≥23.0% - ventilate to lower O_2 to acceptable levels, or use Level B and control fire hazards & ignition sources.
		☐ LEL	Confirm at least 12% oxygen is present to ensure accuracy of LEL readings. At <10% LEL - Continue working, continue to monitor LEL levels At ≥10% LEL- Immediately withdraw from area. Resume work ONLY after LEL readings reduced to <10%.

☐	**ACTION LEVELS FOR TOXICS** (sustained breathing zone concentrations)	**Parameters**	**Level D, Modified D***	**Use levels C or B*, as indicated below, OR take action to reduce breathing zone level to concentration acceptable for Level D*.**
		☐ VOCs	< __ ppm	__ ppm to __ ppm: Level C (air purifying respirator) > __ ppm: Level B (air-supplied respirator)
		☐ Carbon Monoxide	< 35 ppm	≥35 ppm - Level B (air-supplied respirator)
		☐ Hydrogen Sulfide	< 10 ppm	≥10 ppm - Level B (air-supplied respirator)
		☐ Total Dust	< __ mg/m^3	> __ mg/m^3 - Level C (air-purifying respirator)
		☐		
		☐		

*** Levels of Protection:**
Level D (standard work clothes, basic personal protective wear, no chemical protective clothing, no respiratory protection)
Modified Level D (chemical protective clothing in addition to standard work clothes, no respiratory protection)
Level C (air purifying respirator or dust mask, in addition to chemical protective clothing)
Level B or A (air supplied respirator, chemical protective suit; fully-encapsulating suit for Level A)

C.2. OTHER WORKER EXPOSURE MONITORING ☒ Applicable ☐ Not Applicable, Not Anticipated

☐ Air Sampling *(sample collection, passive dosimeter)*	☐ Ionizing or Non-ionizing Radiation Testing	☒ Heat Stress Testing
☐ Wipe/Bulk Sampling *(to evaluate worker exposure)*	☐ Noise Testing	☐ Other

EXPLANATORY NOTES, CLARIFICATIONS:
Work to be conducted in direct sunlight in the summer. Standard heat stress precautions should be taken.

PART D – APPROVALS, ACKNOWLEDGEMENTS

To be prepared by contractor supervising the work.

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.			
THA PREPARED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*
THA REVIEWED/ APPROVED BY: (minimum one person)	*Printed Name*	*Signature*	*Date*

D.2. FIELD CREW ACKNOWLEDGEMENTS

CONTRACTOR'S FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

Appendix C: Summary of Chemical Hazards

1,4-Dioxane

1,4-Dioxane is used as a solvent. Acute (short-term) inhalation exposure to high levels of 1,4-dioxane has caused vertigo, drowsiness, headache, anorexia and irritation of the eyes, nose, throat, and lungs in humans. It may also irritate the skin. Damage to the liver and kidneys has been observed in rats chronically (long-term) exposed in their drinking water. In three epidemiologic studies on workers exposed to 1,4-dioxane, the observed number of cancer cases did not differ from the expected cancer deaths. Tumors have been observed in orally exposed animals. EPA has classified 1,4-dioxane as a Group B2, probable human carcinogen.

Chemical Name	PEL[1]	TLV[2]
1,4-dioxane	100	20

[1] Cal/OSHA Permissible Exposure Limit in parts per million TWA
[2] ACGIH Threshold Limit Value in parts per million TWA

Chlorinated Solvents/Volatile Organic Compounds (VOCs)

Chlorinated VOCs are widely used as solvents in industrial operations such as degreasing, manufacturing, cleaning and dry cleaning, and are also present in household products and automotive fluids. They readily form vapors which can accumulate in indoor air spaces (i.e., via migration through the subsurface) and react with ozone to form sub-micron sized particles with the potential to cause adverse respiratory health effects. Free product releases (via surface or subsurface discharges or inadequate disposal) can migrate downward to significant depths and through fine-grained deposits to groundwater, and can persist as wide-scale sources of vapor plumes for long periods of time.

Several chlorinated hydrocarbons have been identified in soil, indoor air vapor, and groundwater at the site including perchloroethylene (PCE), trichloroethylene (TCE), and 1,2-dichloroethane (DCA). The likely routes of exposure to chlorinated solvents include inhalation, ingestion and direct contact with the skin or eye. The toxicity of chlorinated solvents varies; many affect the CNS and some are identified as carcinogens. PCE can affect the CNS and cause irritation of the skin, eyes, and upper respiratory tract. TCE can depress the CNS, affect kidneys, liver, and lungs and can cause rapid and irregular heartbeat. Toxic effects are increased when combined with alcohol, caffeine, and other drugs. DCA can cause CNS depression and damage to the liver, kidneys, heart, and digestive system. Eye contact with DCA can cause irritation and serious injury if not removed promptly. DCA and TCE are flammable liquids; the LEL of both solvents are approximately 6% and their flash points are less than 100°F. PCE is not considered flammable. These chlorinated solvents are only slightly soluble in water.

Exposure levels will be maintained below OSHA PEL or NIOSH REL as shown in the table below.

Chemical Name	PEL[1]	REL[2]
trichlorofluoromethane (Freon 11)	50	1
1,1,2-trichloro-1,2,2-trifluroethane (Freon 113)	100	1000
1,1-Dichloroethane (1,1-DCA)	100	Ca
1,1-Dichloroethene (1,1-DCE)	200	200
1,2-Dichloroethane (1,2-DCA)	50	200
1,1,2-trichloroethane (1,1,2-TCA)	10	10
cis-1,2-dichloroethene	200	200
carbon tetrachloride	10	5
chloroform	100	10
tetrachloroethene (PCE)	100	25
trichloroethene (TCE)	100	Ca

[1] OSHA Permissible Exposure Limit (PEL) in parts per million
[2] ACGIH Threshold Limit Value (TLV) in parts per million
Ca - Carcinogenic

Hexavalent Chromium

Hexavalent chromium [Cr(VI)] is one of the valence states (+6) of the element chromium. It is usually produced by an industrial process. Cr(VI) is known to cause cancer. In addition, it targets the respiratory system, kidneys, liver, skin and eyes. A major source of worker exposure to Cr(VI) occurs during "hot work" such as welding on stainless steel and other alloy steels containing chromium metal. Cr(VI) compounds may be used as pigments in dyes, paints, inks, and plastics. It also may be used as an anticorrosive agent added to paints, primers, and other surface coatings. The Cr(VI) compound chromic acid is used to electroplate chromium onto metal parts to provide a decorative or protective coating.

Workplace exposure to hexavalent chromium may cause lung cancer in workers who breathe airborne hexavalent chromium; irritation or damage to the nose, throat, and lung (respiratory tract) if hexavalent chromium is breathed at high levels; and/or irritation or damage to the eyes and skin if hexavalent chromium contacts these organs in high concentrations.

Chemical Name	PEL[1]	TLV[2]
Hexavalent Chromium	0.005	0.05

[1] Cal/OSHA Permissible Exposure Limit in parts per million TWA
[2] ACGIH Threshold Limit Value in parts per million TWA

DRAFT

Appendix D: Air Monitoring

Applies to Task: ☒ ① ☒ ② ☐ ③ ☐ ④ ☒ ⑤ ☐ ⑥ ☐ ⑦ ☐ ⑧ ☐ ⑨

☒ *Photoionization Detector (PID)*

Brand/Model No.: MiniRAE 3000 ™
eV:10.6

Monitoring Frequency: continuously in breathing zone

Breathing Zone

Reading (ppm)	Action
0 to 5	Level D PPE
5 to 25	Level C PPE
Greater than 25	Stop work. Evacuate the area. If upon return, levels still exceed the action level, stop work and implement engineering controls.

Note: readings taken in the breathing zone and sustained for > 1 minute.

☐ *Oxygen (O_2) Meter*

Brand/Model No.: _____

Monitoring Frequency: _____

Reading (%)

	Action
Less than 19.5	Stop work. Evacuate the area.
19.5 to 23.5	Continue to work with caution.
Greater than 23.5	Stop work. Evacuate the area.

Note: _____

☐ *Explosimeter*

Brand/Model No.: _____

Monitoring Frequency: _____

Source (% LEL)

Reading	Action
1 to 10	Continue with caution.
Greater than 10	Stop work. Evacuate the area. If upon return, if concentration still exceeds 10% LEL, ventilate until concentration is back to <10% LEL.

Note: _____

☐ *Flame Ionization Detector (FID)*

Brand/Model No.: _____

Monitoring Frequency: _____

Breathing Zone

Reading (ppm)	Action
_____ to _____	Level D PPE
_____ to _____	Level C PPE
Greater than _____	Stop work. Evacuate the area. If upon return, levels still exceed ____, stop work and implement engineering controls.

Note: _____

☐ *Chemical Detector Tube*

Brand/Model No.: _____

Monitoring Frequency: _____

Breathing Zone

Reading (ppm)	Action
_____ to _____	Level D PPE
_____ to _____	Level C PPE
Greater than _____	Stop work. Evacuate the area. If upon return, levels still exceed ____, stop work and implement engineering controls.

Note: _____

☐ *Other: Gas-Chromatograph with PID*

Brand/Model No. _____

Monitoring Frequency: _____

Breathing Zone

Reading (ppm)	Action (1,4 Dioxane)
_____ to _____	Level D PPE, monitor periodically
_____ to _____	Level C PPE (half-face APR)
Greater than __	Stop work. Evacuate the area. If upon return, levels still exceed 50 ppm, stop work and implement engineering controls.

Note: If 0 or <25 ppm 1,4 dioxane present, but you see elevated concentrations of VOCs, at 50 ppm VOCs, stop work and upgrade to Level C (half-face APR with organic vapor cartridges). You may continue up to 500 ppm with this respirator configuration.

Appendix E: Personal Protective Equipment

	Task ①	Task ②	Task ③	Task ④	Task ⑤	Task ⑥	Task ⑦	Task ⑧	Task ⑨
Potential PPE Level per Task	☒ D ☒ C	☒ D ☒ C	☒ D ☐ C	☒ D ☐ C	☒ D ☒ C	☒ D ☐ C	☒ D ☐ C	☒ D ☐ C	☒ D ☐ C

Modified Level D		***Level C***	
Equipment	***Material/Type***	***Equipment***	***Material/Type***
☒ Safety glasses		☐ Full-face air-purifying respirator	Cartridge Type:
☒ Hard-toed boots		☒ Half-mask air-purifying respirator	Cartridge Type: HEPA
☐ Protective clothing		☒ Safety glasses	
☒ Hard hat*		☒ Hard-toed boots	
☒ Hearing protection*		☐ Protective clothing	
☒ High-visibility vest*	Type II	☒ Hard hat	
☐ Outer boots*		☒ Hearing protection*	
☒ Outer gloves*	Nitrile	☒ High-visibility vest*	Type II
☐ Other:		☐ Outer boots*	
		☒ Outer gloves*	Nitrile
		☐ Inner gloves*	
		☐ Other:	

* PPE items may be downgraded (only with concurrence of Project's Health and Safety Coordinator and PM)

Appendix F: Safety Data Sheets

Included in this HASP	Chemical
☐	Acetone
☒	Alconox
☐	Ammonia
☒	Bentonite
☐	Diesel Fuel Oil No. 2-D
☐	Gasoline
☐	Helium
☐	Hexane
☐	Hydrochloric Acid
☐	Hydrogen
☒	Isobutylene Calibration Gas
☐	Isopropyl Alcohol
☐	KB-1
☐	Methane Calibration Gas
☐	Nitric Acid
☐	Permanganate
☒	Portland Cement
☐	Sulfuric Acid
☐	Other: _____
☐	Other: _____
☐	Other: _____
☐	Other: _____

Note: SDSs are for chemicals that used to perform project work, not site contaminants. Contractors will add applicable SDSs based on any chemicals they bring to the project.

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency phone number: 800-255-3924.
813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2009/04/20

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier).
CAS# 497-19-8: LD50 4020 mg/kg - rat oral.
CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS

Physical state: Solid

Appearance & odor: Almost odourless.
White granular powder.

Odor threshold (ppm): Not available.

Vapour pressure (mmHg): Not applicable.

Vapour density (air=1): Not applicable.

By weight: Not available.

Evaporation rate (butyl acetate = 1): Not applicable.

Boiling point (°C): Not applicable.

Freezing point (°C): Not applicable.

pH: (1% aqueous solution).
9.5

Specific gravity @ 20 °C: (water = 1).
0.85 - 1.10

Solubility in water (%): 100 - > 10% w/w

Coefficient of water\oil dist.: Not available.

VOC: None

Section 4 : FIRE AND EXPLOSION HAZARD DATA

Flammability: Not flammable.

Conditions of flammability: Surrounding fire.

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.

Auto-ignition temperature: Not available.

Flash point (°C), method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available.

Explosive power: None

Section 5 : REACTIVITY DATA

Chemical stability:	Stable under normal conditions.
Conditions of instability:	None known.
Hazardous polymerization:	Will not occur.
Incompatible substances:	Strong acids. Strong oxidizers.
Hazardous decomposition products:	See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry:	Skin contact, eye contact, inhalation and ingestion.
Effects of Acute Exposure	
Eye contact:	May cause irritation.
Skin contact:	Prolonged contact may cause irritation.
Inhalation:	Airborne particles may cause irritation.
Ingestion:	May cause vomiting and diarrhea. May cause abdominal pain. May cause gastric distress.
Effects of chronic exposure:	Contains an ingredient which may be corrosive.
LD50 of product, species & route:	> 5000 mg/kg rat oral.
LC50 of product, species & route:	Not available for mixture, see the ingredients section.
Exposure limit of material:	Not available for mixture, see the ingredients section.
Sensitization to product:	Not available.
Carcinogenic effects:	Not listed as a carcinogen.
Reproductive effects:	Not available.
Teratogenicity:	Not available.
Mutagenicity:	Not available.
Synergistic materials:	Not available.
Medical conditions aggravated by exposure:	Not available.
First Aid	
Skin contact:	Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical attention if irritation persists.
Eye contact:	Check for and remove contact lenses. Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.
Inhalation:	Remove victim to fresh air. Seek medical attention if symptoms persist.
Ingestion:	Dilute with two glasses of water. Never give anything by mouth to an unconscious person. Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak / Spill: Contain the spill.
Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.
Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves / Type:

Neoprene or rubber gloves.

Respiratory / Type:

If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye / Type:

Safety glasses with side-shields.

Footwear / Type: Safety shoes per local regulations.

Clothing / Type: As required to prevent skin contact.

Other / Type: Eye wash capability should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

Material Safety Data Sheet

Version 3.0
Revision Date 12/29/2008
Print Date 06/16/2009

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Bentonite

Product Number : 285234
Brand : Sigma-Aldrich

Company : Sigma-Aldrich Canada, Ltd
2149 Winston Park Drive
OAKVILLE ON L6H 6J8
CANADA
Telephone : +1 9058299500
Fax : +1 9058299292
Emergency Phone # : 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Montmorillonite

Formula : H2Al2O6Si
Molecular Weight : 180.1 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Bentonite a colloidal clay. consist primarily of montmorillonite			
1302-78-9	215-108-5	-	-

3. HAZARDS IDENTIFICATION

Emergency Overview

Target Organs

Lungs

WHMIS Classification

Not WHMIS controlled. Not WHMIS controlled.

HMIS Classification

Health Hazard: 0
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be harmful if swallowed.

4. FIRST AID MEASURES

If inhaled
If breathed in, move person into fresh air. If not breathing give artificial respiration

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

5. FIRE-FIGHTING MEASURES

Flammable properties

Flash point	not applicable
Ignition temperature	no data available

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Avoid dust formation.

Environmental precautions
Do not let product enter drains.

Methods for cleaning up
Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Handling
Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
For prolonged or repeated contact use protective gloves.

Eye protection
Safety glasses

Hygiene measures
General industrial hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	granules
Colour	grey, beige

Safety data

pH	6.0 - 9.0
Melting point	no data available
Boiling point	no data available
Flash point	not applicable
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Density	2.400 g/cm3
Water solubility	no data available

10. STABILITY AND REACTIVITY

Storage stability
Stable under recommended storage conditions.

Materials to avoid
Strong acids

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Aluminum oxide, silicon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Intravenous - rat - 35 mg/kg
Remarks: Lungs, Thorax, or Respiration:Acute pulmonary edema.

Irritation and corrosion

no data available

Sensitisation

no data available

Chronic exposure

Carcinogenicity - mouse - Oral
Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Liver:Tumors.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Signs and Symptoms of Exposure

Lung irritation, Asthma

Potential Health Effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.
Ingestion	May be harmful if swallowed.
Target Organs	Lungs,

Additional Information
RTECS: CT9450000

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

no data available

Ecotoxicity effects

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 19,000 mg/l - 96 h

Further information on ecology

no data available

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

DSL Status
All components of this product are on the Canadian DSL list.

WHMIS Classification

Not WHMIS controlled.	Not WHMIS controlled.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

MATERIAL SAFETY DATA SHEET
29 CFR 1910.1200 OSHA Hazard
Communication Rule Format
Chem-Tel 24 Hour Emergency # 1-800-255-3924

MINE SAFETY APPLIANCES COMPANY
P.O. Box 426
Pittsburgh, PA 15230
PHONE (412) 967-3000

This product contains isobutylene, oxygen and nitrogen, substances subject to the Pennsylvania Worker and Community Right-To-Know Act.

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 10028038 Calibration Check Gas, 100 ppm Isobutylene in Air

CHEMICAL NAME - Isobutylene, Oxygen, Nitrogen Mixture

ADDITIONAL IDENTITIES - MSA P/N 10028038 Calibration Gas

FORMULA - C_4H_8 in Air

APPLICABLE CHEMICAL CONTENTS

	ppm	TWA
Isobutylene (CAS 115-11-7)	100	None
Air	Balance	None

NOTE: Gas under pressure, 1000 PSIG at 70°F, Approx. 100 Liters gas at atmospheric pressure

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless odorless gas.

BOILING POINT - N/A

SPECIFIC GRAVITY (H_2O = 1) - N/A

VAPOR PRESSURE - N/A

PERCENT VOLATILE BY VOLUME - N/A

VAPOR DENSITY (AIR = 1) - > 1

SOLUBILITY IN WATER - Isobutylene - Insoluble
Oxygen - 3.2 cm^3/100 ml (25°C)
Nitrogen - 2.3 cm^3/100 ml (0°C)

N/A - Not Applicable

PHYSICAL HAZARD INFORMATION

PHYSICAL HAZARD - Compressed gas, 1000 PSIG at 70°F

CONDITIONS OR MATERIALS TO AVOID - None

FLASH POINT - N/A LEL - N/A UEL - N/A

EXTINGUISHING MEDIA - This calibration gas mixture is not flammable. Use extinguishing media appropriate to surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES - See Next Item

UNUSUAL FIRE AND EXPLOSION HAZARDS - Gas under pressure, 1000 PSIG at 70°F. Do not exceed 120°F.

HEALTH HAZARDS

HEALTH HAZARDS - None Known for 100 ppm Isobutylene in Air. Isobutylene Inhalation Rat LC50: 620 Gm/M^3/4H. Isobutylene Inhalation Mouse LC50: 415 gm/M^3/2H.

SIGNS AND SYMPTOMS OF EXPOSURE - N/A to this gas mixture.

PRIMARY ROUTES OF ENTRY - Inhalation

TARGET ORGANS - Isobutylene is an asphyxiant, which displaces oxygen in the environment..

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE - No information

EXPOSURE LIMITS - None (ACGIH 2009)

CARCINOGENICITY DATA - Component gases are not listed by NIOSH RTECS, OSHA, NTP or IARC.

EMERGENCY AND FIRST AID PROCEDURES - None

SAFE HANDLING AND USE

HYGIENIC PRACTICES - Avoid breathing gas.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT - N/A

PROCEDURES FOR SPILL OR LEAK CLEANUP - Ventilate area

WASTE DISPOSAL - Do not puncture or incinerate cylinder. Before discarding cylinder, slowly release contents to a safe exhaust. Dispose of cylinder in accordance with local, state and federal regulations

STORAGE - Store in a cool, dry, well-ventilated area. Do not exceed 120°F.

CONTROL MEASURES

PERSONAL PROTECTIVE EQUIPMENT - Due to the limited amount of gas in the cylinder, and the low release rate employed in instrument calibration, respiratory protection is not indicated under conditions of intended use.

ENGINEERING CONTROLS - Mechanical ventilation is suitable.

WORK PRACTICES - Avoid breathing gas. Use in well-ventilated areas. Follow the calibration procedure detailed in the MSA instruction manual provided with the instrument under calibration.

DATE OF PREPARATION - Rev. 2, April 2009

Ciment Québec inc.

MATERIAL SAFETY DATA SHEET
PORTLAND CEMENT

SECTION 1 - INFORMATION PRODUCT AND MANUFACTURER

Product name :	Portland cement	**CAS # :** 65997-15-1
Other commercial name :	Types GU-PER (10PER), GU(10), MS(20), HE(30), LH(20M), Trillium Cement	

MSDS prepared by :	Laboratory Ciment Quebec Inc. 145, Centenaire boulevard St-Basile, Quebec, Canada G0A 3G0	**Manufacturer :**	Ciment Quebec Inc. 145, Centenaire boulevard St-Basile, Quebec, Canada G0A 3G0
Preparation date :	August 2009		Phone : (418) 329-2100
Revision date :	September 2009		Fax : (418) 329-3436

Components :	Calcium compounds. Calcium silicate compounds and other calcium compounds containing iron and aluminum make up the majority of this product.
Material uses :	Main component in the majority of the mixtures of concrete.

WHMIS Classification et pictograms :

Class D2A
Material causing other toxic effects

Class E
Corrosive material

Personal protection


Eye Protection


Respiratory Protection


Waterproof Gloves


Waterproof Boots

SECTION 2 - INGREDIENT COMPOSITION

Name	CAS #	%	Lethal dose (LD_{50})
Tricalcium Silicate	12168-85-3	30-70	----------
Dicalcium Silicate	10034-77-2	10-30	----------
Tetracalcium-Alumino-Ferrite	12068-35-8	1-20	----------
Calcium Sulfate	7778-18-9	2-10	194 g/m^3 (human inhalation)
Tricalcium Aluminate	12042-78-3	1-15	----------
Calcium Carbonate	1317-65-3	0-5	----------
Magnesium Oxide	1309-48-4	0-5	----------
Calcium Oxide	1305-78-8	0-0,2	----------
Crystalline Silica	14808-60-7	0-0,2	400 mg/kg (ipr rat)
Chromates	Various	<0,1	----------

SECTION 3- PHYSICAL AND CHEMICAL PROPERTIES

Appearance :	Fine gray powder (solid and odorless)	**Boiling point :**	> 1000 °C
pH (in water) :	12-13	**Specific gravity (H_2O=1.0) :**	3,2
Solubility in water :	0,1 to 1%	**Evaporation rate :**	Not applicable
Vapor pressure :	Not applicable	**Freezing point :**	Not applicable
Vapor density :	Not applicable	**Viscosity :**	Not applicable

SECTION 4 - FIRE AND EXPLOSION RISKS

Flammable limits :	Non combustible	**Fire hazards :**	Not applicable
Hazardous combustion products :	None	**Explosion hazards :**	Not applicable
General hazards :	Avoid breathing dust.	**Flash point :**	Not applicable
Fire fighting instructions :	This product is non combustible. Treat adjacent material. Self contained breathing apparatus is recommended to limit exposure to smoke from any combustion source.		

SECTION 5 - ACCIDENTAL RELEASE MEASURES, HANDLING AND STORAGE

Spills or release :	Collect dry material using a scoop or shovel. Avoid actions that cause dust to become airborne. Avoid inhalation and skin contact with dust. Do not spill into drains.
Handling and storage :	Minimize dust exposure. Keep product dry until used. Promptly remove dusty clothing or launder before reuse. Wash thoroughly after exposure.

SECTION 6 - TOXICOLOGICAL INFORMATION

Access zones :	Skin contact, eye contact, inhalation and ingestion (unlikely).	
Effects of acute exposure :	**Skin :**	Cement and cement paste can dry the skin, cause irritations, burns, skin cracking as well as an allergic reaction in the presence of hexavalent chrome.
	Eyes :	Irritation, chemical burns and blindness in case of exposure to large amounts of cement.
	Inhalation :	Irritation of the higher respiratory tracts. It can cause irritation of the internal walls of the nose.
Effects of chronic exposure :	**Skin :**	Epidermis burns. People hypersensitive to chrome may exhibit allergic responses, from mild rash to severe skin ulcers.
	Inhalation :	May contain trace concentrations of crystalline silica. Prolonged exposure to breathable free crystalline silica can aggravate upper respiratory and lung diseases and cause silicosis.
Ingestion :	Ingestion of a small quantity of Portland cement is not harmful, nevertheless large quantities can be unhealthful and cause intestinal problems.	
Exposure limits :	Threshold Limit Value-Timed Weighted Average (TLV-TWA) = 10 mg total dust/m^3 for Portland cement. TLV-TWA = 0,1 mg breathable dust/m^3 for crystalline silica.	
Carcinogenicity :	Crystalline silica, a contaminating product of traces in Portland cement, is classified at present as being a carcinogenic product (group 1) by the International Agency for Research (IARC).	
Other remarks :	Skin injury may occur without pain or discomfort. The hazardous ingredients when in contact with water produce calcium hydroxide, with an alkalinity level of pH 12 to 13. This level of alkalinity can cause skin and eye irritation.	

SECTION 7 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Skin protection :	Gloves, boots and clothing to prevent skin contact. Wash periodically exposed skin with soap and water. Rinse wet kiln dust mixtures from clothing to prevent skin contact.
Respiratory protection :	Avoid actions that cause dust dispersion. Wear an approved respirator for dust if the levels exceed the exposure limits.
Eye protection :	Carry tight safety glasses in dusty medium. Contact lenses should not be worn.
Ventilation :	Ventilation should be sufficient in volume and distribution to maintain dust exposure limits.

To minimize exposure of breathable airborne crystalline silica, occupational health and safety regulations generally require measures such as: work practices, hygiene practices, protective clothing and respiratory equipment. Consult the relevant regulations.

SECTION 8 - STABILITY AND REACTIVITY

Stability :	Product is stable.
Hazardous decomposition :	No decomposition. If in contact with water, may produce calcium silica hydrates and calcium hydroxide.
Incompatible materials and conditions to avoid :	Dissolves in hydrofluoric acid producing corrosive silicon tetrafluoride gas. Silicates react with powerful oxidizers such as fluorine, chlorine trifluoride and oxygen difluoride.

SECTION 9 – FIRTS AID

Eye :	Immediately flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes including under lids, to remove all particles. Call physician immediately.
Skin :	Wash with pH-neutral soap and cool water. Seek medical attention in case of prolonged exposure and burns.
Inhalation :	Move person to fresh air and seek medical attention if coughing and other symptoms persist. Inhalation of large amounts require immediate medical attention.
Ingestion :	Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.